THE LANCET.

No. 4239. Vol. CLXVII. LONDON, SATURDAY, NOVEMBER 26, 1904. [Pp. 120+56.

CONTENTS.

THE BRADSHAW LECTURE on the Treatment of Enteric Fever. Delivered at the Royal College of Physicians of London on Nov. 15th, 1904, by F. FORD CAIGER, M.D. Lond., F.R.C.P.Lond., Medical Superintendent, South-Western Fever Hospital, Stockwell 1467

THE HORACE DOBELL LECTURE on the Life-history of Saprophytic and Parasitic Bacteria and their Mutual Relation. Delivered before the Royal College of Physicians of London on Nov. 22nd, 1904, by E. KLEIN, M.D., F.R.S., Lecturer on Advanced Bacteriology at St. Bartholomew's Hospital.. 1477

ORIGINAL ARTICLES.

Clinical Observations on the Anæsthetic Effects of Methyl Oxide, Ethyl Chloride, and the so-called "Somnoform." By FREDERIC W. HEWITT, M.V.O., M.A., M.D.Cantab., Anæsthetist to His Majesty the King; Physician-Anæsthetist to St. George's Hospital, &c. — (*Illustrated*).—(*Concluded*) 1486

Memorandum on the Red Light Treatment of Small-pox. By J. T. C. NASH, M.D. Edin., D.P.H.Camb.—(*Illustrated*)..... 1490

Further Note on the Red Light Treatment of Small-pox. By T. F. RICKETTS, M.D.Lond., M.R.C.P.Lond., Medical Superintendent of the Small-pox Hospitals of the Metropolitan Asylums Board; and J. B. BYLES, M.B., B.C.Cantab., F.R.C.S. Eng., Assistant Medical Officer at the Joyce Green Hospital..... 1490

The Mechanism of the Aortic Valves in Health and Disease. By R. J. EWART, M.D., M.Sc. Vict., F.R.C.S.Eng., Junior Demonstrator of Physiology at the University of Manchester.—(*Illustrated*) 1492

The Evolution of Man's Diet. By HARRY CAMPBELL, M.D., F.R.C.P.Lond., Physician to the North-West London Hospital and to the Hospital for Nervous Diseases, Welbeck-street.—VIII. 1519

CLINICAL NOTES:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

Calomel as a Poison, with an Illustrative Case. By T. L. BUNTING, M.D.Edin..... 1494

A Case of Accidental Vaccination Inoculation simulating Cutaneous Anthrax. By WILLIAM SHEEN, M.S., M.D. Lond., F.R.C.S. Eng., Surgeon to the Cardiff Infirmary, &c.—(*Illustrated*) 1494

A Case of Diphtheria Treated with Mulyptol. By R. HAY MARSHALL, M.B., C.M. Aberd. 1495

A MIRROR OF HOSPITAL PRACTICE.

THE LONDON HOSPITAL:
A Case of Cortical Hæmorrhage without Fracture or External Sign of Injury causing Fits and Paralysis; Operation; Recovery. (Under the care of Mr. C. Mansell Moullin)..... 1495

BARNET VICTORIA COTTAGE HOSPITAL:
A Case of Fracture of the Base of the Skull (Posterior Fossa) through the Mouth. (Under the care of Dr. Wm. Thyne) 1496

MEDICAL SOCIETIES.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY:
Discussion on Chloroform Anæsthesia 1496

PATHOLOGICAL SOCIETY:
Emphysematous Gangrene due to the Bacillus Aerogenes Capsulatus.—A New Blood Fluke of Man 1499

LIVERPOOL MEDICAL INSTITUTION:
Treatment of so-called Concussion of the Brain.—Spinal Cocainisation. — Some Old and New Remedies 1499

EPIDEMIOLOGICAL SOCIETY:
Epidemiological Aspects of Industrial Diseases 1500

ABERDEEN MEDICO-CHIRURGICAL SOCIETY:
Presidential Address 1501

BRITISH GYNÆCOLOGICAL SOCIETY:
Treatment of Severe Prolapse by Extirpation of the Uterus and Vagina..... 1501

CLINICAL SOCIETY OF MANCHESTER:
Ringworm 1501

TORQUAY MEDICAL SOCIETY:
Congenital Rickets..... 1502

GLASGOW SOUTHERN MEDICAL SOCIETY:
Presidential Address 1502

ÆSCULAPIAN SOCIETY:
Pulmonary Signs of Subdiaphragmatic Inflammation 1502

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY:
Presidential Address 1502

THERAPEUTICAL SOCIETY:
The Metric System in Dispensing 1503

ROYAL MEDICAL SOCIETY, EDINBURGH:
Presidential Address 1503

MANCHESTER MEDICAL SOCIETY:
Malignant Disease supervening upon Lupus Vulgaris 1503

BRISTOL MEDICO-CHIRURGICAL SOCIETY:
Exhibition of Specimens 1503

REVIEWS AND NOTICES OF BOOKS.

Medical Laboratory Methods and Tests. By Herbert French, M.A., M.D. Oxon., M.R.C.P.Lond. 1503

Elementary Practical Physiology. By John Thornton, M.A. 1504

Elements of Surgical Diagnosis. By A. Pearce Gould, M.S. Lond., F.R.C.S.Eng. 1504

Handbook of the Anatomy and Diseases of the Eye and Ear. By D. B. St. John Roosa, M.D., and A. Edward Davis, M.D. 1504

Ceylon: Administration Reports, 1903. Part IV. Report of Sir Allan Perry 1504

Guide to the Examination of the Throat, Nose, and Ear for Senior Students and Junior Practitioners. By William Lamb, M.D., C.M. Edin. 1505

A Manual of Personal Hygiene. Edited by Walter L. Pyle, M.D. Second Edition 1505

The Journal of Physiology 1505

The Practitioner 1505

ANALYTICAL RECORDS FROM THE LANCET LABORATORY.

(1) "Soloid" Ehrlich Triple Stain; (2) "Soloid" Hemisine Compound; and (3) "Tabloid" Donovan Solution 1506

Calorit..... 1506

Vinode Medicated Wool 1506

Schering's Beta-Eucaine Lactate 1506

Wannieck's Grape Juice 1506

Peptonised Milk Food Cocoa ... 1506

Prævalidin..... 1506

Old Scotch Whisky No. 10 1507

LEADING ARTICLES.

THE SESSION OF THE GENERAL MEDICAL COUNCIL 1508

SOCIAL EVOLUTION AND PUBLIC HEALTH 1509

THE TREATMENT OF ENTERIC FEVER 1510

ANNOTATIONS.

Ambulance Dogs in Warfare ... 1511

King Edward's Hospital Fund for London..... 1511

Gas *v.* Electricity 1512

The Food of the Japanese Soldier in connexion with Beri-beri..... 1512

The Provision of Sanatoriums for Tuberculous Patients..... 1513

Professional Secrecy 1513

Substitution in the Meat Trade 1514

Revivalism in Wales 1514

A Week's Fog and its Lessons.. 1515

A Form of Fracture of the Radius due to an Accident in Starting a Motor car 1515

Paupers as Nurses 1515

The Area of Concrete Conceptions and its Localisation in the Brain 1516

The Teaching of Hygiene in Universities and Schools 1516

Sarcoma Melanodes of Hebra... 1517

The Need for an Organised Ambulance Service 1517

Death of Dr. George Vivian Poore 1517

The Office of Director-General of the Army Medical Service 1517

VITAL STATISTICS:
Health of English Towns ... 1525
Health of Scotch Towns 1525
Health of Dublin 1525

THE GENERAL MEDICAL COUNCIL.

Sir William Turner's Address: Resignation of the President 1536

Army and Navy Examination Returns 1537

Dental Business 1538

Medical Students as Pupils ... 1538

SPECIAL ARTICLES.

Asylum Reports 1518

Royal College of Surgeons of England: Annual Meeting of Fellows and Members 1522

"Church Bells" and the Hospitals 1523

The Services..... 1524

The World's Fair at St. Louis... 1527

Cholera and Plague in the Near East 1529

The International Congress on Dermatology.—(*Concluded*).. 1529

Manchester 1530

Wales and Western Counties Notes 1531

Ireland 1532

Paris 1532

Egypt 1532

Canada 1533

New York 1534

Australia 1535

LOOKING BACK.

(From THE LANCET, Saturday, Nov. 25, 1826) 1507

CORRESPONDENCE.

The New Sydenham Society's Clinical Atlas (Mr. Jonathan Hutchinson)..... 1526

Anarcotine in the Treatment of Pulmonary Tuberculosis (Mr. Jas. H. Fraser) 1526

On the Action of Perchloride of Iron in Blood Poisoning and other Disorders (Dr. G. C. Garratt) 1526

Intolerable Ingratitude 1526

Diploma Mongering (Dr. Albert S. Morton)..... 1541

Flat or Oval Pins 1542

The Purity of Bread 1542

Drink and Labour 1542

A Question in Ethics..... 1542

OBITUARY.

Achille Vintras, M.D. St. And., M.R.C.S.Eng. 1535

MEDICAL NEWS.

Milk Depôts for Infants 1491

Metropolitan Hospital Sunday Fund 1518

Pass-lists of the Society of Apothecaries of London and Trinity College, Dublin 1539

Foreign University Intelligence 1539

Bridgwater Infirmary 1539

Royal Hospital for Diseases of the Chest 1539

Incorporated Medical Practitioners' Association..... 1539

Milk-supply in Towns 1539

National Dental Hospital..... 1539

University of Oxford..... 1540

Donations and Bequests 1540

Books, &c., received 1540

Appointments 1540

Vacancies 1541

Births, Marriages, and Deaths 1541

Notes, Short Comments, and Answers to Correspondents.. 1541

Medical Diary 1542

FOR INDEX TO ADVERTISEMENTS SEE PAGES 2 & 4.

INDEX.

MEDICAL AND OTHER BOOKS AND PUBLICATIONS.

COVER.

ARNOLD :—
Hutchison .. Diseases of Children.... 1

BAILLIERE, TINDALL & COX :—
Hall ..... Diseases of the Nose, &c. 1
Hill ..... Cancer Problem 1
Campbell, H. Respiratory Exercise in Treatment of Disease.. 1
Eccles ..... Hernia..... 1
,, ... Descended Testis 1
Frazer ..... Stricture of the Urethra 1

CHURCHILL, J. & A. :—
Squire's Pocket Companion to the British Pharmacopœia 1

CORNISH BROS. (Birmingham) :—
Leedham-Green .... Sterilisation of the Hands 1

DAVIDSON :—
Grant ..... Model Throat 1

GLAISHER :—
Cowen ..... X-Rays 1
Herschell .. Diagnosis of Cancer 1
Savill ..... Neurasthenia 1
Wright..... Treatment of Hæmorrhoids, &c. 1

LEWIS :—
Fuchs..... Aphasia &c. 1
,, ... The Brain as an Organ of Mind 1
,, ... Paralyses 1
,, ... Forms of Hysterical &c. Paralysis..... 1
Campbell, H. Flushing, &c. 1
Headache 1
Herring .... Sterilisation of Urethral Instruments 1
Jones..... Medical Electricity 1
Rawling .... Landmarks, &c. 1

PENTLAND, Y. J. :—
Berry..... Manual of Practical Ophthalmology 1
Tasmann & Miles..... Manual of Surgery 1

SAUNDERS & CO. :—
Jellife's Pharmacognosy..... 1
Moynihan on Gall-stones..... 1

SMITH, ELDER & CO. :—
Lawson .... Diseases and Injuries of the Eye..... 1

MEDICAL LIBRARIES, &c. :—
Clinical Journal 1

APPLETON, S. :—
Hall ..... Adolescence 7
Holt ..... Diseases of Infancy 7
Leube ..... Medical Diagnosis..... 7
Morton ..... Spinal Diseases, &c. 7
Osler ..... Practice of Medicine .. 7
Sidis & Goodhart.. Multiple Personality .. 7

BAILLIERE, TINDALL & COX :—
Sigg ..... Constipation 10
Herbert .... Cataract Extraction 8
Latham .... Sanatorium Treatment of Tuberculosis 10
,, ... Pulmonary Consumption 10
Vincent .... Nutrition of the Infant 10

BALE, SONS & DANIELSSON :—
British Gynæcological Journal 9

CASSELL & CO. :—
Bland-Sutton Tumours 8
Bousquet .. Serums, Vaccines, and Toxines 8
Bruce ..... Materia Medica, &c..... 8
Gould ..... Surgical Diagnosis 8
Herman .... Diseases of Women 8
,, ... First Lines in Midwifery 8
,, ... Difficult Labour 8
Maddison & Raitz .. Clinical Methods 8
Klein & Eddins.... Elements of Histology.. 8
Manson, Sir P. Tropical Diseases 8
Marsh ..... Diseases of the Joints ... 8
Morris, H. .. Surgery of the Kidneys and Ureter 8
,, .. Injuries and Diseases of Genital, &c., Organs .. 8

CASSELL & CO.—(Continued).
Morris, H. .. Surgical Diseases of the Kidney and Ureter 9
Morris, M. .. Diseases of the Skin 11
Savage..... Insanity, &c..... 8
Treves, Sir F. Operative Surgery 8
,, Surgical Anatomy..... 8
,, Intestinal Obstruction.. 8
,, System of Surgery..... 8
,, Surgical Operations 8
Yeo ..... Mineral Springs, &c. .. 8
,, ... Food in Health, &c. 9
,, ... Medical Treatment 8

CHURCHILL, J. & A. :—
Stella ..... Malignant Disease..... 10
Clouston .... Mental Diseases..... 3
Coles ..... The Blood 5
,, ... Bacteriology..... 5
Curtis & Stewart .. Physics and Chemistry 5
Cripps ..... Diseases of the Rectum 10
,, ... Cancer of the Rectum .. 10
Fenwick .... Medical Diagnosis..... 9
Fenwick, E. H. .... Operative, &c., Tumours 3
,, ... Urinary Diseases 3
,, ... Electric Cystoscopy 3
,, ... Ulceration of the Bladder 3
,, ... Tumours of the Bladder 3
,, ... Diseases of the Kidney 3
,, ... Handbook of Clinical Cystoscopy 3
Galabin .... Midwifery 3
,, ... Diseases of Women 9
Jacobson & Steward .. Operations of Surgery .. 8
Jellett ..... Obstetrics 9
,, ... Gynæcology..... 3
Marsh ..... Clinical Lectures and Essays 8
Squire's Pocket Companion to the British Pharmacopœia 9
Taylor .... Practice of Medicine .. 3
Walsham & Spencer .. Surgery 3
White ..... Materia Medica 9

CORNISH BROS. (Birmingham) :—
Sawyer, Sir J. Practical Medicine 10
,, Insomnia 10

KEGAN PAUL & CO. :—
Taylor ..... Diseases of the Eye 10

LEWIS :—
Lewers..... Diseases of Women 6
,, ... Cancer of the Uterus .. 6
Martindale & Westcott .. Extra Pharmacopœia .. 6

MURRAY, J. :—
Halliburton . Biochemistry of Muscle and Nerve 6
Newman .... Bacteriology 6

RENSHAW :—
Guy & Ferrier .... Forensic Medicine..... 10
Tanner ..... Index of Diseases 10
Ward ..... Human Osteology 10
Wood ..... Application of Trusses 11

SAUNDERS & CO. :—
Boston ..... Clinical Diagnosis 5
Jellife ..... Pharmacognosy 5
McFarland .. Pathology 5
Medical Hand-Atlases 6
Moynihan .. On Gall-stones 5

SMITH, ELDER & CO. :—
Keetley .... Orthopædic Surgery..... 11
,, ... Gastric Ulcers 11
,, ... Complicated Fractures 11
Leftwich .... Index of Symptoms 10
Tirard ..... Albuminuria, &c. 6

WRIGHT & CO. (Bristol) :—
Low ..... Diseases of the Ear 9
Walker..... Dermatology 9

MEDICAL LIBRARIES, &c. :—
Bickste—Stammering 8
Glaisher—October Catalogue..... 10
Locke—
Stephesson & Murphy's Hygiene, &c. for sale 11
No. 913, L.O., Strand—
Medical Works for sale 11

OFFICIAL AND GENERAL ANNOUNCEMENTS.

APPOINTMENTS VACANT :—
Addenbrooke's Hos., Cambridge .. 84, 92
Birmingham and Midland Eye Hospital 86
British Medical Association 84
Captain, Strand 86
Cardiff Infirmary 85
Holloway Sanatorium Hospital 84
Hospital for Sick Children 84
Jersey General Dispensary 85
Liverpool Dispensaries 86
London Hospital 85
Metropolitan Hospital, Kingsland-road 85
Metropolitan Water Board 86
Royal Berkshire Hospital 85
Royal College of Physicians 86
Royal Hospital for Incurables, Dublin 86
Royal Surrey County Hospital, Guildford 85
South Devon and East Cornwall Hospital 84
Stirling District Asylum, Larbert 85
St. Peter's Hospital for Stone 85
Sussex County Hospital 85
Victoria Hospital for Children..... 86
Walsall and District Hospital 85
West London Hos., Hammersmith-road 86
White Mess Sick and Accident Society, Skelmersdale 86

ASSISTANCIES, MEDICAL 92

ASYLUMS, HOMES, &c. :—
Aberystwith, the Harrits of Wales .. 79
Altadore Sanatorium, Co. Wicklow .. 82
Ashwood House, Kingswinford 77
Barnwood House Hospital 78
Bath Zander Institute 76
Bethel Hos. for Mental Diseases..... 83
Buntingford House Retreat, Herts .. 86
Camberwell House, Peckham-road..... 78
Clarence Lodge, Clapham-park 77
Coppice, The, Nottingham 76
Cotswold Sanatorium 80
Crockahury Sanatorium, Surrey..... 83
Dalrymple House, Rickmansworth 77
Dartmoor Sanatorium 82
Denton Johns' Sanatorium, Parkstone 85
Dr., Henderns 83
Dunmarry, Clifton..... 77
East Anglian Sanatorium, Hapsburgh 80
E., Brighton 83
Fairford Retreat, Gloucestershire .. 77
Ferguson, Barnet 83
Finsen Light Cure, &c., Norwich 84
Flower House, Catford..... 76
Grove House, Church Stretton..... 76
Grove, The, Catton, Norwich 76
Hadley Open Air Sanatorium, Ipsden .. 81
Haslemere Invalid Home 83
Haydock Lodge, Newton-le-Willows.. 80
High Shot House, Twickenham 76
Hitch, Mrs., Hollington 76

ASYLUMS—(Continued).
Home School for Children, Cheltenham 84
Hydro, Cawston 84
Inverath Lodge Retreat, Comisburgh 78
Lady Superintendent, Brighton 84
Lady Superintendent, Streatham 84
Lawson, Nordrach-on-Dee, Banchory 81
London Open-Air Sanatorium, Wokingham 82
Lufthar Sanatorium, Pwrbury 81
Maternity Home, New King's-road..... 86
Melbourne House, Leicester..... 78
Middleton Hall, Co. Durham 76
Midland Counties Asylum, Knowle .. 77
Moat House, Tamworth 78
Moorcote Open-Air Sanatorium, Swerdley 81
Mount Canigou Sanatorium, Vernet-les-Bains 84
Nordrach in Wales..... 80
Nordrach-upon-Mendip Sanatorium .. 80
Northlands Retreat, Wandsworth 84
Northwoods House, Winterbourne..... 75
No. 742, L.O., Strand..... 84
Oehli Hills Sanatorium 82
Oswestria, Boscombe..... 83
Overdale, Whitefield 84
Park House Convalescent, &c., Home, Waterloo 78
Parkstone Winchelsea 82
Physician, Piccadilly 84
Plas-yn-Dinas, Merionethshire 80
Plympton House, South Devon 76
Rostrevor Open-air Sanatorium 81
Shaftesbury House, Formby..... 78
Sidlaw Sanatorium, Auchterhouse .. 81
Silver Friend, Teignmouth 83
Small-pox, &c., Hos., South Mimms .. 83
Springfield House Private Asylum, Bedford 77
St. Andrew's Hospital, Northampton 78
St. Luke's Hospital, E.C. 76
Stocker, Craven-street 86
Stone House, Canterbury 83
Stourfield Park Sanatorium, Bournemouth 82
Stretton House, Church Stretton 76
Thundercliffe Grange, nr. Rotherham 83
Tower House, Leicester 78
Vale of Clwyd Sanatorium..... 80
Warneford Asylum, Oxford 78
West Malling-place, Kent 79
Weston-super-Mare Nursing Home .. 77
Whitmead Hill Sanatorium, Faraham 82
Winchcome House, Kingsnorton 77
Woodford House, Exeter 78
Wye House, Buxton 78
Wyke House, Isleworth 78
Yarrow Convalescent Home, Broadstairs 79
39, Warwick-road, Earl's-court 85

BATHS :—
Bad Ems 84
Bendley's, Matlock 84

COMPANIONS :—
Downing, Sandcock, Middleton, & Lewis, Lenderhall-street..... 93
No. 833, L.O., Strand..... 93

FINANCIAL &c. :—
Birkbeck Bank 74
English and Scottish Law Life Office.. 74
Equitable Reversionary Interest Soc. 74

HOMES &c., WANTED :—
No. 820, L.O., Strand 83

HOTELS :—
Amuan—Cataract & Grand Hotels ... 77
Barton Court Hous, New Milton 77
Luxor—Karnak Hotel & Luxor Hotel 77
Montreux Hotel and Chateau, Belmont 77
Mount Pelerin—
Grand Hotel Mont Pelerin 77
Port Grotaz—English Grand Hotel .. 77

HOUSE & ESTATE AGENTS :—
Ardley & Hobbs, Clapham Junction .. 81
Bedford & Co., Wigmore-street 89
Estate Office Iverna Court 91
Giddy & Giddy, Maidenhead 91
H. & W., Sunderland 91
Manager, Buckingham Gate 91
Neville, Chorley 91

LIFE & FIRE ASSURANCES :—
General Life Assurance Co. 74
National Provident Institution 74
Prudential 74

MEDICAL ACCOUNTANTS, &c. :—
Bradsley 88
Turner 92

MEDICAL AGENTS :—
Hall & Hardwicke 89
Lee & Martin..... 89
London Medical Agency 88
Manchester Medical Agency 84
Manchester Medical, &c., Association 90
Medical Agency 84
Reeden, Herbert 91
Reeden, J. C. 91
Orridge..... 91
Peacock & Hadley 91
Reynolds & Branson 91
Scholastic, Clerical, &c., Agency. .. 87, 90
Turner 88, 94
Wilson & Son 90

MEDICAL SCHOOLS (London) :—
Cooke's School of Anatomy 74
West London Post-Graduate College.. 79

NURSING INSTITUTES :—
Clapton Nursing Home 76
Co-operative Nursing Association 78

NURSING INST.—(Continued).
dion. for Sick Children, Gt. Ormond-st. 76
Leeds Trained Nurses' Institution 78
London Nurses' Association 76
Male and Female Nurses' Assoc. 78
Male Nurses' Association 75
Male Nurses' Co-operation 76
Middlesex Hos. Trained Nurses' Inst. 75
Midway Nursing Institute 78
Nurses' Co-operative, Portland-place 75
Queen Charlotte's Lying-in Hos..... 75
St. John's House 75
Temperance Male and Female Nurses' Co-operation 76
Temperance Male Nurses' Co-operation 79

OFFICIAL NOTICES :—
Army Medical Service 73
Central London Throat, &c., Hos..... 73
Hospital for Diseases of the Throat, Golden-square 73
Indian Medical Service 73
Mount Vernon Hospital for Consumption 73
Naval Medical Examination 74
Royal College of Surgeons of England 73
Sailors' Language Examination 73
University of Cambridge..... 74

PARTNERSHIPS & PRACTICES :—
Managing Director, Strand 92
M. B. Leeds 92
No. 751, L.O., Strand..... 92
No. 785, L.O., Strand..... 92
No. 797, L.O., Strand..... 92
No. 814, L.O., Strand..... 92
No. 815, L.O., Strand..... 92
No. 816, L.O., Strand..... 92
No. 817, L.O., Strand..... 92
No. 818, L.O., Strand..... 91
No. 822, L.O., Strand..... 92
No. 827, L.O., Strand..... 92
No. 829, L.O., Strand..... 92
No. 832, L.O., Strand..... 92
No. 834, L.O., Strand..... 92
No. 839, L.O., Strand..... 92
No. 841, L.O., Strand..... 92
No. 853, L.O., Strand..... 92
Summer & Co., Liverpool 92
S. W., Golden-square 92
Thairlwall & Son, Great James-Street 92

RAILWAY & STEAMSHIP CO.'S :—
New Zealand Shipping Co..... 74
Royal Mail Steam Packet Co.—Tours 74

SCHOOLS, PREPARATORY, &c. :—
Manchester Physical Training College 74

TUTORS & LECTURERS :—
Dauzenne 74
Fellowships .. 75
Gooch..... 74, 75
Keris..... 75
No. 802, L.O. .. 92
No. 823, L.O. .. 74
Ten Francs..... 75
Weymouth 75

(For Index to Trade and Miscellaneous Advertisements see page 4.)

J. & A. CHURCHILL, PUBLISHERS.

The latest Editions of the following Books are—

The Seventh of **Taylor on the Practice of Medicine.** 15s. net.

The Eighth of **Walsham and Spencer on Surgery.** 622 Illustrations. 18s. net.

The Fourth of **Jellett on Obstetrics.** 152 Illustrations. 8s. 6d.

The Second of **Jellett on Gynæcology.** 225 Illustrations. 10s. 6d.

The Sixth of **Clouston on Mental Diseases.** 30 Plates. 14s. net.

The Fourth of **Jacobson and Steward on the Operations of Surgery.** 550 Engravings. Two Vols. 42s.

The Sixth of **Galabin on Midwifery.** 329 Engravings. 14s. net.

The Sixth of **Galabin on Diseases of Women.** 284 Engravings. 16s. net.

The Second of **Corbin and Stewart on Physics and Chemistry.** 126 Engravings. 6s. 6d.

The Eighth of **Hale White on Materia Medica.** 7s. 6d.

The Ninth of **Fenwick on Medical Diagnosis.** 139 Engravings. 9s.

By ALFRED C. COLES, M.D., D.Sc., F.R.S.E.

Clinical Diagnostic Bacteriology, including Serum- and Cyto-DIAGNOSIS. With 2 Plates. 8s. net.

The Blood: How to Examine and Diagnose its Diseases. Second Edition. With 6 Plates. 10s. 6d.

By E. HURRY FENWICK, F.R.C.S.,
Surgeon to the London Hospital.

Just Ready, with 31 Plates and 144 Engravings in the Text, 18s. net.

A HANDBOOK OF CLINICAL CYSTOSCOPY

Diseases of the Bladder:
STONE, TUBERCLE, TUMOURS, FISTULÆ, BILHARZIA, FOREIGN BODIES.

Diseases of the Prostate

Diseases of the Kidney.

The following Separate Sections can be obtained—

Ureteric Meatoscopy: Its Value in the Diagnosis and TREATMENT OF OBSCURE DISEASES OF THE KIDNEY. Based on 400 Major Operations on the Kidney. With 14 Plates and 45 Illustrations in the Text. 6s. 6d.

Operative and Inoperative Tumours of the Urinary BLADDER: a Clinical and Operative Study based on Five Hundred Cases. With 39 Illustrations. 5s.

Ulceration of the Bladder, Simple, Tuberculous, and MALIGNANT. With Illustrations. 5s.

BY THE SAME AUTHOR.

Tumours of the Bladder. Fasc. I. 5s. net.

The Cardinal Symptoms of Urinary Disease. 8s. 6d.

Atlas of Electric Cystoscopy. (With Dr. BURCKHARDT of Bâsle.) With 34 Coloured Plates, embracing 33 Figures. 21s. net.

London: J. & A. CHURCHILL, 7, Great Marlborough Street.

INDEX—(CONTINUED).

TRADE AND MISCELLANEOUS ADVERTISEMENTS.

COVER.

PAGE

CHEMISTS & DRUGGISTS:—
Cook & Co.—
Antiseptic Soap ... II
Squire & Sons—
Formaniglobin ... IV

FOODS:—
Fry's Pure Concentrated Cocoa ... III
" Cocoa and Milk ... III
Valentine's Meat Juice Co.—
Meat Juice ... III

WINES, BEER, SPIRITS, &c.:—
Burgoyne's Tintara Burgundy ... II
Waltham Bros.—
Brown Stout ... III
Nursing Stout ... III

BILLIARD TABLES, &c.:—
Riley, Ltd.—
Billiard and Dining Tables ... 17

BOTTLE MERCHANTS:—
Isaacs ... 70
Islington Glass Bottle Company ... 70
Rhow Brothers, Ltd. ... 11

CARRIAGES, HORSES, &c.:—
Armstrong—
Umbrellas and Grooms' Liveries 14
Cook & Holdway—
Green Brougham ... 14
Cortland Wagon Co.—
Cortland American Carriages ... 16
De Dion-Bouton, Ltd.—
Motor Carriages ... 16
Duryea Co.—
Duryea Power Carriages ... 15
Mayfield & Son—
County Victoria ... 14
Ripon Buggy ... 14
Gentleman's Delvoir Cart ... 14
Pellant—Motor Cars ... 14
St. John Ambulance—
Invalid Carriage ... 14
W. George-street, Portman-square—
Second-hand Carriage ... 14

CHEMISTS & DRUGGISTS:—
Allen & Hanburys—
Medical Iral ... 27
Byno-Hypophosphites ... 44
Allenbury's Throat Pastilles ... 42
Cod Liver Oil ... 39
"
Ashton & Andrew—
Formolyptol ... 28
Anglo-American Pharmaceutical Co.—
Colchi-Sal ... 52
Betal-Oil ... 52
Antikamnia Chemical Co.—
Antikamnia Tablets ... 26
Battley's Liquors ... 42
Bayer Co.—
Pharmaceutical Preparations ... 59
Benger's Food, Ltd.—
Liquor Pancreaticus ... 48
Liquor Peptonus ... 48
Brin's Oxygen Co.—Brin's Oxygen ... 64
British Antitoxine Manufacturing Co.—
Antitoxine ... 63

CHEMISTS—(Continued).
British Druggists—
Hypogen ... 64
Batogan ... 64
Bullock & Co.—
Pepsina Porci ... 62
Acid Glycerine of Pepsine ... 62
Burgoyne, Burbidges & Co.—
Salit ... 62
Collargol ... 62
Aconine ... 62
Antiseptic Cresol ... 62
Burroughs, Wellcome & Co.—
Kepler Solution ... 44
Vaseline ... 49
Tabloid Hypodermic Products ... 42
" medicine Pocket Case ... 47
Christy & Co.—
Glyco-Thymoline ... 23
Glyco-Hercin ... 23
Denver Chemical Co.—
Antiphlogistine ... 25
Dinneford's Fluid Magnesia ... 60
Fairchild Bros. & Foster—
Zymine Peptonising Tabes ... 34
Pepsin Digestive Products ... 35
Hewlett & Son—
Liq. Santal Flav. c. Buchu et Cubebs ... 42
Hudson—Eucalyptol Jujubes ... 45
Kreochyle Co.—
Barff Sore-Throats ... 62
Maltine Manufacturing Co.—
Maltine with Cod Liver Oil ... 45
Martindale—
Amyl Nitrite Capsules ... 27
Mathaei & Co.—Dry Yeast ... 67
Newbery & Sons—
Pulvis Jacobi Vir ... 63
Parke, Davis & Co.—
Collunaria ... 39
Price's Patent Candle Co., Ltd.—
Toilet Soaps ... 55
Radmon & Co.—
Slinger's Nutrient Suppositories ... 63
Salamon & Co.—Parest Chloroform ... 63
Sanatogen Co.—Sanatogen ... 31
Savory & Moore—
Pancreatic Emulsion ... 49
Schimmel & Co.—Pollantin ... 65
Scott & Bowne—
Scott's Emulsion ... 54
Squire & Sons—
Elixir Terperoin ... 31
Glycero " ... 31
Pastil " ... 31
Tamar Indian Grillon ... 63
Vinolia Co., Ltd.—
Vinolia ... 29
Wilcox, A. & M.—
Nafalan ... 63

FILTERS:—
Defries & Sons—Pasteur Filter ... 20

FOODS:—
Armour & Co.—
Glycerine Extract of Red Bone Marrow ... 55
Aylesbury Dairy Co.—
Humanised Milk ... 30
Benger's Food, Ltd.—
Peptonised meat Jelly ... 48
Peptonised Chicken Jelly ... 48
Blackburn's Dietetic Preparations ... 67
Cantrell & Co.—Gluten Bread, &c. ... 67
Brand & Co.—Fever Food ... 64
Burroughs, Wellcome & Co.—
Perfected Wyeth Beef Juice ... 45
Cadbury's Cocoa ... 60
Callard & Co.—
New Diabetic Foods ... 66
Carrick & Co.—
Liquid Peptonoids ... 45

FOODS—(Continued).
Clarke & Sons—Nursery Milk ... 67
Foods, Ltd.—
Mcoleys Food ... 69
International Pharmos, Ltd.—
Pharmos ... 51
" Cocoa ... 51
" Arrowroot ... 51
" Oats ... 51
Lamaby & Son—soup Squares ... 60
Liebig's Extract of Meat Co., Ltd.—
Oxo ... 65
Maltoz Co—Maltoz ... 69
Nelson, Dale & Co.—
Hipi Hatton Rusks ... 59
Mentle—Mills Food ... 61
Nicolay & Co.—
Hovenzyme ... 12
Rowntree's Elect Cocoa ... 63
Savoryalle's Tonic ... 24
Sidoline Vi-Cocoa, Ltd.—Vi-Cocoa ... 61
Van Abbott & Sons—Gluten Flour ... 67
Virol, Ltd.—Virol ... 23
Wallace & Sons—
Humanised Milk ... 22
Asses' Milk ... 22

FURNITURE, &c.:—
Army and Navy House Furnishing Co. 11
Carter—Invalid Furniture ... 18
Maple & Co.—
Linoleum ... 18
Ward—Invalid Chairs, &c ... 13
Wincyele Trading Co., Ltd.—
Excelsior Adjustable Table ... 72

HEAD. & SURG. APPLIANCES:—
Allen & Hanburys—
Sheriffmer for Surgical Dressings ... 38
Bailey & Son—
Aseptic Hospital Furniture ... 19
Beach's Thermo Cautery ... 13
Coaking—
Plastic Plastic Jackets and Splints ...
Downing Radiant Heat Co.—
Downing Radiant Heat and Light Treatment ... 18
Mikulin & Lawley—Osteology, &c. ... 15
Pope & Plante—
Elastic Stockings ... 68
Abdominal Supporting Belts ... 69
Robinson & Sons—Gamgee Tissue ... 74
Wood—
Buroha Crêpe Vulpeau Bandages ... 69

MINERAL WATERS:—
Cheltenham Pavilion ... 54
Davis—Turney Water ... 66
Hogg & Son—Lithia Waters ... 66
Ingram & Royle—
Vichy ... 58
Carlsbad Salt ... 59
Oppel & Co.—
Friedrichshall Mineral Water ... 65
Robinson's Concentrated Waters ... 61
Voigt & Co.—
Wiesbaden Gout-Water ... 67
Wheeler & Co.—Anti-Lactin ... 66

PRINTERS & ENGRAVERS:—
Cooke & Co.—
Brass Name Plates and Lamps ... 11
Outhwaite—
Brass Door Plates ... 14
Heraldry, &c. ... 14

SANITARY APPLIANCES, &c.:—
British Lysoform Co., Ltd.—
Lysoform ... 54
Chlorol Hygienic Co.—
Chlorol Powder and Tablets ... 64

SAN. APPLIANCES—(Continued).
Condy's Fluid ... 19
Defries & Sons—
Equifex Disinfector ... 20
Joyce' Sanitary Compounds Co.—
Oylits ... 58
Newton, Chambers & Co.—Izal ... 37
Seabury & Johnson—
St. Louis Exposition Award ... 60

STATIONERY, &c.:—
Parkins & Gotto—Doctors' Bills ... 17

STOVES:—
Roberts—
Terra Cotta Portable Stoves ... 70

TAILORS, BOOTMAKERS, &c.:—
Emerson Shoe Store—
Emerson Boot ... 60
Fisher & Sons—
Chesterfield Overcoat ... 72
Hamilton & Co.—
Parapluie Overcoat ... 72
Capote Ulster ... 72
Rankin Fur Co.—
Gentlemen's Fur-lined Overcoats 69

TOBACCO, CIGARS, &c.:—
Anglomio & Co.—
Marsuma Igars ... 20
" Cigarettes ... 20
" Smoking Mixture ... 20
Wartmann & Co.—Cigarins ... 67

TYPEWRITING, &c.:—
Cambridge Typewriting Agency, Adelphi ... 70
Remington Typewriter Co.—
Card Index Prescription Book ... 70

VACCINE LYMPH:—
Assoc. for Pure Vaccine Lymph ... 71
Hime—Glycerinated Calf Vaccine ... 71
Incorporated Liverpool Institute of Comparative Pathology ... 71
Jenner—Institute for Calf Lymph ... 70
Robson—
Glycerinated Pure Calf Lymph ... 70
Reaney's Calf Lymph Establishment ... 70
Wyleys, Ltd.—Calf Lymph ... 71

WINES, BEER, SPIRITS, &c.:—
Buck & Co.—
"G a" Diabetic Whisky ... 61
Bishop & Sons—
Brut-Royal ... 68
Brown & Fish—
Fine Vintage Brandy ... 68
Buchanan—
Black and White Scotch Whisky ... 60
Special Scotch Whisky ... 60
Dewar's Whisky ... 66
Gautier's Liqueur Brandy ... 65
Hennessy's Three Star Brandy ... 64
Mackenzie & Co.—
Pure Highland Malt Whisky ... 67
Macdhan Richardson & Co.—
French Clarets ... 69
Marsell's Three Star Brandy ... 57
The Orion South Africa Wines ... 67
Wright & Son—
Old Grans Special Toddy ... 64

MISCELLANEOUS:—
Dixon—Machine ... 11
Hicks—Private Secretary, &c. ... 33

EVERY FRIDAY.

THE LANCET.

PRICE SEVENPENCE.

SUBSCRIPTION, POST FREE.

IN THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (commencing at any time) are payable in advance.

ADVERTISING.

Books and Publications	Seven Lines and under	£0 5 0
Official and General Announcements	Ditto.	0 5 0
Trade and Miscellaneous Advertisements	Ditto.	0 4 6
Situations Wanted and Vacant		0 4 6
(Seven Lines = about 65 words)	Every additional line	0 0 6

The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to Advertisements.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, *accompanied by a remittance.*

Cheques and Post Office Orders (Crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager.

MR. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to Advertisements or Subscriptions should be addressed.

THE LANCET can be obtained at all Railway Bookstalls, and may be ordered through any Bookseller.

Answers are received at the Office, by special arrangement, to Advertisements appearing in THE LANCET.

OFFICES: 423 AND 424, STRAND, LONDON, W.C.; AND 1, 2, AND 3, BEDFORD STREET, ADJOINING.

The Bradshaw Lecture

ON

THE TREATMENT OF ENTERIC FEVER.

Delivered at the Royal College of Physicians of London on Nov. 15th, 1904.

BY F. FOORD CAIGER, M.D. LOND., F.R.C.P. LOND.,

MEDICAL SUPERINTENDENT, SOUTH-WESTERN FEVER HOSPITAL, STOCKWELL.

MR. PRESIDENT AND GENTLEMEN,—My first duty is to express my grateful appreciation of the honour which the President has done me in deputing me to deliver this lecture. In my choice of a subject I have been guided by the President's wish that it should be one more or less identified with my daily work and I have therefore selected the treatment of enteric fever as seemingly not inappropriate.

During recent years a great deal has been said and still more has been written as to the treatment of typhoid fever and that by some of the most eminent members of our profession. It is not unnatural, therefore, that I should feel some diffidence in bringing the subject before you on this occasion; and yet, when one reflects that our case-mortality to-day remains at a height of more than 15 per cent. and that in this country alone some 5000 or 6000 persons annually die from the disease, I feel that it is not, perhaps, without some justification that I venture to recall your attention to the important question of its treatment. To attempt to deal at all exhaustively within the time at my disposal with a subject as wide as that of the treatment of enteric fever would be manifestly impracticable, for in addition to a discussion of numerous measures of a directly remedial character it would involve the careful consideration of various points of no less importance in connexion with the dietary and the nursing of the case. Moreover, the subject is one which has, perhaps, offered a wider field for discussion and been a source of greater difference of medical opinion than in the case of any other disease. I propose, therefore, to confine my remarks entirely to the field of therapeutics, with special reference to various measures which, as the result of my experience, I have come to regard as worthy of some confidence.

From a therapeutic point of view it may be stated broadly that the treatment of a case of enteric fever will probably be conducted on one of two well-recognised lines—an active remedial method or a passive, or so-called expectant, method, each of which has its firm adherents. But whether we favour the exhibition of remedies having for their object a direct interference with the natural course of the disease or whether, as is so much the fashion of to-day, we adopt an expectant attitude and are content to restrict our efforts to combating individual symptoms in the event of their assuming a threatening aspect and to relieving any complications which may arise during the course of the illness, the fact must never be forgotten that the treatment of enteric fever is not merely a matter of therapeutics but implies the general management of the case.

Now, it may be asserted generally that our management of any case of serious illness is likely to be successful in proportion as it is adapted to the special circumstances which characterise that attack, due regard being given not only to the underlying morbid process, of which certain of the symptoms are the recognised expression, but also to the personal factor which in some instances contributes so largely to the general aspect of the case; and to this rule enteric fever is no exception. Experience clearly indicates that what is best for one patient may not necessarily be so for another and that the best results will be achieved, not by a slavish adherence to any particular method of treatment to the exclusion of others, but by the adoption of such measures as seem best adapted to the idiosyncrasy of the individual patient and the particular type of his attack.

The methods of treating enteric fever by means of remedies which are assumed to be capable of exerting a direct controlling influence over the natural course of the disease may be appropriately referred to as either (1) specific, (2) antipyretic, or (3) antiseptic, according to their conception and to the nature of the agents employed, and they may conveniently be discussed under these headings.

I. First, as to specific treatment. The remarkable success which has attended the treatment of diphtheria by the injection of antitoxic serum and in less degree that of tetanus, not unnaturally encouraged the hope that a curative serum might be prepared which would prove equally efficacious in the case of typhoid fever. But unfortunately such favourable anticipations have not been realised. In the case of the two former diseases, the serum of the horse which has been successfully immunised against these infections is found to be highly antitoxic, besides possessing some anti-bacterial power. In the case of typhoid fever, however, the serum of a horse after repeated inoculations with the virus, though possessed of anti-bacterial properties, as in the case of diphtheria and tetanus, is found to be practically devoid of any antitoxic value and consequently useless as a curative serum. Until a serum can be produced which is antitoxic in addition to containing anti-bacterial substances, it would seem that all attempts to confer a specific passive immunity in enteric fever must, as in the case of cholera, apparently be doomed to failure. It should be mentioned, however, that Chantemesse claims to have produced a serum with which a remarkable success in the treatment of enteric fever is said to have been achieved. Speaking at the Seventh French Medical Congress held last month in Paris, he stated that of 545 cases of the disease which had been treated in his wards at the 29th Bastion between April 1st, 1901, and Oct. 1st, 1904, only 22 proved fatal, representing a mortality of 4 per cent. Planté and Foucauld with the same remedy were reported in January last year to have treated at the Marine Hospital of St. Mandrier 151 cases with 13 deaths, a mortality of 8·7 per cent. The two series together comprise 696 cases with a fatality of 5 per cent., a success which is really phenomenal.

As to the nature of this serum there is at present some uncertainty. For its preparation a horse is immunised by repeated inoculation with toxic products of the typhoid bacillus obtained by special methods of cultivation. The serum eventually acquires curative properties, but the process is a slow one, requiring a good many months for its accomplishment. Chantemesse states that the serum retains its properties unimpaired by keeping, an observation which suggests that its mode of action is not a bactericidal one. On the other hand, the fact that its injection is often followed by definite, though not prolonged, constitutional disturbance, and the very remarkable fact, as stated by Chantemesse, that the more seriously ill the patient is and the more advanced the disease the smaller should be the injection, seems hardly compatible with the action of a serum which is merely antitoxic. It has been suggested by Dr. A. E. Wright that its curative properties may be explained on the assumption that an active immunity is conferred on the patient as a result of the transference from the horse of unneutralised bacterial poisons which act as vaccines when introduced into the human organism. It is to be regretted that more precise information as to the exact nature of Chantemesse's serum is not forthcoming, since its success in practice is apparently very striking. Any inference as to the efficacy of the serum, however, is unfortunately weakened by the fact that various other remedies, such as baths, packs, and cold effusions, were used in these cases in addition to serum therapy whenever their employment appeared to be indicated.

The beneficial influence which it is claimed may be exerted on the progress of the disease by previous inoculation with attenuated cultures of the typhoid bacillus, which material, it may be observed, is not a serum, though often wrongly so called, but a vaccine, assuredly possesses some claim on our confidence. By this method, undertaken primarily as a protective measure, an active immunity is conferred, at any rate, for a time, and we are therefore prepared to believe that a certain amount of controlling influence might be exerted on the course of the disease, even though it may have failed to avert infection. The procedure, which was initiated by Dr. Wright when professor of pathology at the Army Medical College at Netley, consists of the inoculation of sterile cultures of the typhoid bacillus which have been attenuated by exposure to heat. The process is analogous to the anti-cholera inoculations successfully practised in India by Haffkine and more recently on an

extensive scale against plague. It is interesting to note that the work in each instance has for its prototype the world-renowned antirabic inoculations of Pasteur, who to some extent, however, must be regarded as having been working in the dark, since the specific infecting agent of rabies has not even yet been determined. The immediate effect of the inoculation, as Wright has been careful to point out, is to induce a temporary lowering of resistance. This "negative phase," as he terms it, corresponds with a diminution of the bactericidal power of the blood, and until it has passed off the subject is apparently not only more susceptible to enteric fever but the attack is likely to be more severe if contracted. Under the system of dosage which it has so far been customary to employ this period of heightened susceptibility has appeared to last for from one to two weeks, but with improved methods of administration, founded on exhaustive experimentation and confirmed by riper experience, Wright has shown that it may be very substantially reduced.

The success attendant on Wright's method of anti-typhoid inoculation has been a source of considerable difference of opinion amongst those who have had practical experience of its use. Although the inoculations have been carried out on an extensive scale, more especially amongst the British troops in India and in South Africa during the recent war, the difficulties in the compilation of accurate records, the impossibility in many instances of getting data which are strictly comparable, and the unsatisfactory conditions under which the inoculations were so often performed have tended to impair materially the authority of the published results. When, however, the numbers comprising any statistical record are large and the separate groups contained in it are comparatively numerous, such fallacies certainly tend to exert less influence, and the inference carried becomes proportionally stronger. This, of course, holds good in respect to the statistics of anti-typhoid inoculation.

If we refer to the records dealing with inoculation among the British regiments serving in India as published in the Army Medical Reports, we find that amongst 15,384 men inoculated during the years 1899 to 1901 in various parts of the Indian Empire the incidence of enteric fever was 0·8 per cent. as against 1·5 in the uninoculated, and amongst the 2260 attacks comprised in the series the case mortality in the inoculated was 15·6 per cent. as against 26·6 per cent. in those who had not undergone the treatment. Again, the combined results in a variety of military hospitals in South Africa as furnished in a report by Dr. R. W. Dodgson, the special commissioner appointed to inquire into their working, show that in respect to 4138 cases of enteric fever the case mortality amongst the inoculated was 8·2 per cent., whereas it was 15·1 in those who were not inoculated. In this instance the reduction in mortality was almost 50 per cent, and in the case of the staffs of three of the hospitals—viz., Nos. 8, 9, and 10 general hospitals—located in Bloemfontein during the epidemic of 1900 the reduction obtained was nearly a threefold one, but in this instance the number of attacks, viz., 109, was but small. An investigation as to the value of Wright's method of anti-typhoid inoculation was undertaken by the College of Physicians last year at the request of the War Office and a special committee of the College was appointed to inquire into it. Careful examination of the whole of the evidence available has tended to show that not only is a considerable degree of protection conferred by the inoculation, but that it is also capable of exercising a mitigating influence upon the severity of attack. Further investigations are now being undertaken with the object of effecting an improvement in the vaccine and of extending our knowledge as to the best and most appropriate dosage, and encouraging as the results up to date undoubtedly are it may be confidently expected that with additional light on these points still better results may be looked for in the future.

II. Next, as to the antipyretic method of treatment. On the assumption that pyrexia is the most important factor in a case of enteric fever the exhibition of remedies which have the power of reducing the body heat has been very extensively employed. Although certainly less practised in this country than on the continent the method has received the support of some of our most distinguished clinicians. An antipyretic effect may be brought about either by drugs or the direct application of cold to the surface by means of cold baths, packs, sponging, &c., or by a combination of both.

Of the various drugs which are recognised as possessing antipyretic power, such as sulphate of quinine, antipyrin, antifebrin, phenacetin, salicylates of sodium and quinine, resorcin, kairin, and thallin, even digitalis and veratria, the best for the purpose is undoubtedly quinine. Not only does quinine possess a marked antiseptic influence over living cultures of the typhoid bacillus, as was experimentally demonstrated by Eberth, but its administration is not attended with the depressant influence on the heart, in some instances leading to dangerous collapse, which antipyrin in common with the other tar products I have named is prone to exert. Nor is it, except when given in excessive doses, productive of the mental confusion, delirium, and vomiting which so often attend the use of the salicylates. Quinine, moreover, in addition to its value as a cardiac tonic, is believed not to exert any inhibitory influence on the elimination of toxins from the system as is said to occur with the drugs of the antipyrin class. If quinine be given with the object of lowering the temperature it must be administered in large doses—from 15 to 20 grains or more, preferably, twice in the 24 hours; or, better still, according to the method recommended by Bouchard, which is to give four doses of seven and a half grains, repeated at intervals of a quarter of an hour in the evening of every third day during the first fortnight of the fever. In any case it is a favourable sign if the administration of the drug be followed by a marked fall of temperature. It should be remembered that the full physiological effect of quinine as an antipyretic is not reached until after the expiration of four or five hours, and occasionally even eight. The time of its administration, therefore, should be regulated accordingly. By giving large doses of quinine at the times when the temperature naturally tends to remit the pyrexia can sometimes be made to assume an intermittent course, resembling that so characteristic of normal defervescence. It is very problematical, however, whether an effect produced under such obviously artificial conditions possesses any advantage over a pyrexia of less variable range, provided it be moderate in degree.

For my own part I do not favour the use of antipyretic drugs—at any rate, in antipyretic doses—in cases of moderate fever, as I firmly believe such pyrexia to be a natural element of defence against bacterial invasion and that in proportion as one is successful in stifling what appears to be a reactive pyrexia by means of a powerful antipyretic drug one is acting the part of a very questionable friend in tying the hands of one who is striving to defend himself against an antagonist who has already secured an advantage. In cases, however, in which the pyrexia becomes excessive and in itself represents an additional element of danger by reason of its damaging effect on the cardiac muscle and the central nervous system vigorous antipyretic measures are certainly indicated, as in these circumstances the symptom pyrexia calls for prompt repression. For its accomplishment I much prefer the direct application of cold to the surface, supplemented, if necessary, by a dose of sulphate of quinine, but to this I shall have occasion to refer again when speaking of symptomatic treatment.

Of the various methods of treating enteric fever by means of cold application to the surface, or, to speak more correctly, by the abstraction of heat or refrigeration, there can, I think, be no doubt that the most effective by far is the repeated employment of the cold bath, a form of treatment strenuously advocated some 40 years ago by Brand of Stettin. This, with slight modifications at the hands of his numerous followers, has been very widely employed on the continent, in America, and elsewhere; and, it must be admitted, with signal success. Treatment by means of frequent cold bathing had been extensively practised by James Currie of Liverpool some 70 or 80 years previously, though subsequently it fell into disuse. Currie's methods were undoubtedly somewhat crude and apparently more exacting, although the same principle was involved. He placed his patients in a wooden tub and buckets of cold water were poured over them, a procedure which is hardly in accordance with our views as to the proper way of dealing with a case of enteric fever at the present day. But even in Currie's time, as Collie has pointed out, a cold bath treatment was no new thing, since the records show authentic evidence of its employment by the ancients. Asclepiades, for instance, was in the habit of sending his fever patients to bathe in the springs of Catilliæ, where they apparently derived great benefit.

It is claimed that the cold-bath treatment, when properly carried out, effects a mitigation of the general symptoms of the disease (some of which, though recognised as normal

accompaniments of enteric fever, are averted altogether) and a reduction of the case mortality by a half or even two-thirds. This contention is supported by published results. Thus, in the Prussian army the case mortality was reduced from 25 per cent. to 8 per cent. by means of the cold bath. Jurgensen effected a reduction from 15·4 per cent. to 3·1 per cent. Drasche of Vienna brought down his hospital mortality from 16·2 per cent. to 9·3 per cent.; Tripier and Bouveret of Lyons reduced their mortality from 25 per cent. to 7·5 per cent. Osler of Baltimore lowered the death-rate from 21·8 per cent. to 7·4 per cent. Thompson of New York reduced his mortality from 19 per cent. to 7 per cent.; Hare of Brisbane from 14·8 per cent. to 7·5 per cent. The general experience, then, would show that the fatality from enteric fever can be brought down to somewhere about 7 per cent. by a thorough application of the cold-bath treatment. Hare's record is particularly interesting. For a period of ten years all cases of enteric fever admitted into the General Hospital at Brisbane were treated with the cold bath. They numbered 1902 and the results were compared with those obtained in a consecutive series of 1828 cases received into the hospital during the four and a half years immediately preceding its adoption. The case mortality in the two series was, as I have stated, 14·8 and 7·5 respectively. The record is of particular value, since for a period of 17 months before, and three years after, the cold-bath treatment was introduced, both the management of the wards and the care of the patients were under the personal supervision of Dr. Hare himself.

It was particularly insisted upon by Brand that to procure the full benefit of the treatment it must be commenced at an early stage of the disease. Brand maintained that if the treatment were commenced by the fourth day and continued throughout the attack according to his instructions, not only would the pyrexia be kept at a lower level, but the intestinal lesion would be held in check, the affected follicles in these circumstances not proceeding to ulceration, and consequently the occurrence of both hæmorrhage and perforation would be averted. If, on the other hand, the baths were not commenced until a later stage of the illness the occurrence of actual ulceration could not be avoided, although the course of the illness generally would be favourably influenced in proportion as the treatment was early adopted. Brand's instructions were that the bath should be given every three hours whenever the rectal temperature registered 102·2° or over and that the temperature should be taken again half an hour after the bath, when a fall of about 2° might usually be expected.

In this country the use of the cold bath has been mainly restricted to the combating of hyperpyrexia in special cases. As a systematic method of treating enteric fever it has received comparatively little support, although it has been recommended by such high authorities as Sir William Broadbent and Dr. W. Cayley. Professor Osler, who is a firm supporter of the cold-bath treatment, strikes the right note when he states that he regards it as "not so much special and antipyretic, as tonic and roborant," and were one to supplement this criticism by claiming for it in addition a powerful eliminative agent, one would probably not be over-estimating its virtues. Although Brand claimed for the cold bath that its action was essentially protective against a high temperature the fact that he enjoined more or less continuous friction of the skin throughout the period of the patient's immersion suggests that he was probably alive to its action as an eliminant. It is by no means improbable that it is to its salutary influence on the nutrition of the skin and to its power of maintaining the excretory activity of both the skin and kidneys that the cold bath mainly owes its marked superiority over all other therapeutic procedures of which the primary aim is refrigeration.

According to Dr. Dreschfeld the good effects of the cold bath are readily seen. The pulse becomes slower and the tension of the artery is increased; the number of the respirations diminishes, the tongue becomes moist, and the appetite improves. The nervous system is especially relieved, the delirium disappears for a time, the patient becoming much calmer and the sleep more natural; while the diarrhœa, when present, if not diminished after the first two or three baths have been given, is certainly not increased. The cold bath is contra-indicated when the cardiac action is weak and irregular, the pulse intermittent, or cyanosis marked; as also with intestinal hæmorrhage or perforation and in the case of old persons and young children. The chief drawbacks which appear to militate against the general adoption of the cold-bath treatment are the cumbersomeness which admittedly characterises the procedure and the increased tendency to relapse which is observed to follow its employment. The former objection, having regard to the amount of labour involved in repeatedly placing the patient in the bath and subsequently removing him, usually proves to be wellnigh insurmountable in private practice. In a hospital ward the objection has less weight, but the disinclination usually evinced by the patient and the prejudices of his relatives are factors which have to be reckoned with. So true is this that Osler, while continuing the use of the bath, says that he "prays for a method which, while equally life saving, may prove to be, to put it mildly, less disagreeable." Although a rectal temperature of 102·2° was taken by Brand as the determining point for the bath, to be repeated if necessary every three hours, with an immersion of from 15 to 25 minutes or more at a temperature of 68°, irrespective of the onset of shivering, many of his followers have pursued a less drastic method. Some physicians, for instance, have taken 103°, or even 103·5°, as the determining temperature and have removed the patient on the occurrence of definite shivering. It is generally admitted, however, that the results obtained under these conditions in practice have fallen short of those achieved by Brand.

Again, the "graduated bath," as it is termed, has been widely recommended, originally, I believe, by Ziemssen. By this method the temperature of the bath, which at the moment of the patient's immersion is about 90°, is afterwards rapidly reduced by means of ice to 70° or slightly lower. Sir William Broadbent, who speaks well of the treatment, is inclined to prefer immersion at an initial temperature of 80° rather than 90°. The graduated bath is certainly more adapted to the condition of patients whose circulation is feeble and in whom there is much respiratory distress, those, in fact, who are unable to bear the shock of sudden immersion at the lower temperature, which, on the other hand, is of such marked value as a stimulant in cases where there is considerable nervous depression. This is equally true whether the bath be employed as a systematic measure of treatment or whether, as is more usual in this country, it is simply used as an occasional weapon against an unduly high temperature.

Some 13 years ago Dr. James Barr of Liverpool advocated the treatment of typhoid fever by means of the continuous tepid bath, the patient being immersed in a tank for a period of from one to three or more weeks, in fact, if necessary, during the whole course of the fever. The temperature of the water is maintained at a level of but a few degrees below the normal temperature of the body and in proportion as the pyrexia abates the temperature of the water is raised, until at the completion of defervescence it nearly approximates to that of the patient. Dr. Barr claims for his method that it obviates the drawbacks which are incidental to Brand's while attaining the same good results. He states that of 40 cases treated by the continuous bath a fatal result occurred in only one instance. Such a record is, of course, eminently satisfactory, but relapses, as Dr. Barr, I believe, himself admits, are unduly frequent. One can hardly think that the tank treatment can be a popular one with patients and the method is impracticable under ordinary conditions in private practice.

More recently Dr. Barr has devised a method which, though maintaining the hydrotherapeutic principle in a modified form, is attended with less inconvenience. The patient, instead of being immersed in tepid water, is slung in a hammock which is stretched on a frame erected over the bedstead. The surface of the abdomen and the lower part of the chest are covered with a light flannel compress on to which a stream of water at a temperature of 80° is allowed to trickle continuously, the excess of water as it escapes being collected in a bucket placed beneath the hammock at its most dependent part. The patient wears no body linen but his legs and thighs are covered with a blanket and his comfort is increased, if necessary, by keeping a large spirit lamp continuously burning under the bed. By this means the sensation of chilliness is to a large extent removed while the evaporation of the water is facilitated and its refrigerative influence is correspondingly increased. A large bed cradle is placed over the patient covered only with a single sheet so as to interfere as little as possible with the vaporisation of the water. Dr. Barr speaks very highly of

this method in severe attacks and says that it has so far been successful in every case in which he has employed it.

Another means of refrigeration which has been used a good deal is what is known as the "ice cradle." The patient, but lightly, if at all, covered, lies under a bed cradle in which are hung a number of little pails containing ice. These are frequently replenished and as a result the temperature of the air surrounding the patient is maintained at a low level. It probably falls far short of the cold bath as a systematic method of treatment but it is certainly devoid of the difficulties which are incidental to the bath on whatever lines it may be employed. From a purely antipyretic point of view the "cold-air bath," as it might be termed, is excellent but it is without any influence in stimulating the excretory activity of the skin and kidneys and thus promoting the elimination of toxic products which is so marked an attribute of the cold bath.

The use of the wet pack, whether applied to the whole surface of the body or to the chest and abdomen simply in the form of what is sometimes called an "ice poultice," though capable of abstracting a considerable amount of heat from the skin, is mainly useful by its sedative effect on the nervous system. Although the temporary application of a cold compress to the abdominal wall for the relief of pain or tenderness is often of the greatest value, the influence it exerts on the internal temperature of the body, as revealed by a thermometer placed in the rectum, is frequently very transitory. And the same thing is true of the practice of cold sponging of the surface. Cold sponging, like the occasional application of a wet pack or an ice poultice, though often employed with undoubted advantage in special cases, can hardly be regarded, for reasons that I have already mentioned, as a serious rival to the cold bath as a systematic method of treatment.

Of the various antipyretic drugs which have been used in combination with the cold bath sulphate of quinine is the only one which appears to merit any confidence. It has been extensively used by some continental authorities as an adjuvant in certain cases in which the pyrexia has proved refractory to the influence of cold bathing alone, and apparently with success. The tonic effect which quinine exerts on the circulation, an effect which, it should be mentioned, is not usually apparent during the first 24 hours of its administration, though remarkably persistent, has led to its being employed in combination with a tepid bath in cases where the presence of either cardiac or pulmonary disease or great circulatory enfeeblement renders immersion in cold water inadmissible. In these circumstances a marked antipyretic effect may often be obtained in addition to the other benefits conferred by hydrotherapy. The liability of quinine, however, even when guarded by opium, to set up vomiting when given in large doses may prove an absolute bar to its employment.

III. Next, with regard to antiseptic treatment. Originally, no doubt, antiseptic drugs were administered on the supposition that they were competent to exert a direct bactericidal effect on the specific organism present in the intestine. Murchison, in formulating rules for the treatment of enteric fever, gave as the first indication to neutralise the poison and improve the state of the blood, and he further stated that antiseptic agents might be expected to act directly on the poison in the intestinal canal. Niemeyer's teaching was in the same direction. Since the days of Murchison and Niemeyer our knowledge of the specific agent concerned in typhoid fever has been, to say the least, considerably advanced, and it is now recognised that any attempt to achieve the destruction of bacilli in the lower region of the intestinal canal by the administration of antiseptic drugs by the mouth is nothing short of futile unless given in such strength or in such quantity as to be extremely prejudicial to the patient.

Without claiming for a moment that antiseptic drugs are competent to exert a direct germicidal effect on organisms present in the intestine, blood, or tissues, it is not unreasonable to expect that even when given in relatively small and harmless doses they might be capable of exerting some restricting influence on the multiplication of bacteria in the mucous membrane and contents of the bowel, whether specific or otherwise. That such is actually effected in respect to the various putrefactive organisms which, as a matter of fact, are generally more resistant than the pathogenic species to the action of antiseptic agents, is obvious from the marked diminution in the fœtor of the stools which is usually soon apparent as the result of their administration. Further, recognising, as we do, the extent to which the vital activities of micro-organisms are influenced by very slight changes in their environment, it is surely not too much to assume that, as the result of the presence of even very minute quantities of an antiseptic, typhoid bacilli present in the intestinal mucosa and at a somewhat later stage in the blood and tissues may be so influenced as to be rendered in some degree less capable of elaborating their particular toxin than would be the case were the fluids in which they were living free from any trace of such substance. That the virulence of a micro-organism could be artificially reduced by adding a small quantity of an antiseptic to the culture medium was clearly established by Pasteur who for a time was in the habit of utilising this method exclusively for attenuating cultures of the bacillus anthracis in the preparation of his anthrax vaccine. That the blood may actually become impregnated with the antiseptic is proved by its appearance in the urine, as in the case of carbolic acid, urotropin, and others. And the fact that certain volatile oils, such as cinnamon and eucalyptus, which are known to possess antiseptic properties may be readily detected in the breath and in the exhalations from the skin as a result of their continued internal administration is additional evidence to the same effect.

That the antiseptic method, though frequently misunderstood, is founded on a scientific basis is undeniable. This was vigorously maintained by Dr. I. Burney Yeo who has done so much to popularise its employment. We do not give antiseptics in the belief that they are competent either to slay the germ of typhoid fever or to neutralise its toxin but in the confident anticipation that they will exert a restraining influence on the propagation of the specific bacillus and its congeners and on the various putrefactive organisms which are associated with it in the alimentary canal. Moreover, even if antiseptic remedies are incompetent to exercise any inhibitory influence on the multiplication of bacilli which have already passed into the circulation and have been conveyed to distant organs, we are prepared to believe that some degree of attenuation of these organisms may be brought about by the presence of even minute quantities of an antiseptic in the blood and tissues of the body. In other words, we believe that the morbific agent may be rendered less capable of elaborating a virulent toxin in consequence of the modification of its environment which the presence of an antiseptic implies.

To obtain the full benefit of the antiseptic method its adherents not unnaturally insist that the remedies should be given from an early stage of the disease and in adequate and sufficiently frequent doses. Under these favourable conditions it is claimed that the following clinical indications will be secured: first, that the duration of the attack will be curtailed and the intensity of the fever lessened; secondly, that the mouth and tongue will be kept more clean and moist, with the result that greater comfort will be insured and the appetite maintained; thirdly, that diarrhœa will be controlled, meteorism will be held in check, and the fœtor of the evacuations prevented; fourthly, that the incidence of the most serious complications—that is to say, hæmorrhage and perforation—will be rendered less frequent; and, finally, that the duration of convalescence will be shortened. Some observers, moreover, believe that the chance of relapse is materially lessened if the treatment be continued throughout the earlier period of convalescence.

Now, if the antiseptic method of treatment is competent to effect all this it is deserving of no small measure of confidence. Of the various drugs which are known to possess antiseptic properties calomel is undoubtedly the one which has received the earliest and widest recognition. It has for many years been extensively used by continental physicians and in this country has received the powerful advocacy, amongst others, of Sir Thomas Watson, Dr. Murchison, and Sir William Broadbent. But its employment, except in minute doses, is practically restricted to the earlier stage of the disease. Liebermeister prescribed it in large doses, that is to say, from eight to ten grains given several times during the first 24 hours, provided the case came under treatment before the ninth day of the fever, and he obtained excellent results in a series of 200 cases so treated in comparison with another series in which similar conditions existed, except that the patients received no calomel. Liebermeister believed that it exerted a specific influence on the course of the fever. Murchison gave one or two doses of from three to five grains during the first week of the attack, before there was much

diarrhœa and believed that as a result the disease ran a milder course and was less protracted. The administration of calomel in this way has been widely practised both in this country and on the continent, and as the result of my own experience of it I am convinced that in suitable cases its effect is exceedingly beneficial.

It is not every case, however, that will derive benefit from the treatment. The fact, I think, is not sufficiently recognised that in exceptional instances a dose of three or four grains of calomel, even when given not later than the end of the first week, will directly induce an intestinal irritation, as evidenced by diarrhœa and colic, which tends to persist and may seriously prejudice the ultimate course of the attack. The diarrhœa, as, perhaps, is not unnatural, is then apt to be wrongly regarded as a symptom of the fever rather than an effect of the calomel. I have been so impressed with the reality of this risk in several instances that I have given up the routine use of calomel in the early stages of typhoid fever and now restrict its administration to cases in which there exists some special indication for its employment. It is interesting to note that Sir Thomas Watson, though quite unconscious of their antiseptic properties, was very favourably impressed by the action of the mercurial salts in typhoid fever. He stated that he was constantly struck by the fact that when a soreness of the mouth was observed in his patients they showed marked signs of an improvement and but rarely died from the disease. It is during the early stage of the attack up to about the middle of the second week that the salts of mercury have usually been employed and in respect to calomel its use, except in very small doses, should be practically restricted to this period, since to give it in purgative doses after the establishment of ulceration is rarely admissible.

Of the numerous drugs of the antiseptic class which have been recommended by different physicians for administration at frequent intervals throughout the whole course of the disease their names are legion. In addition to the perchloride and biniodide of mercury may be mentioned sulphate of quinine, chlorine, sulphurous acid, carbolic acid, boric acid, salicylic acid, and the salicylates of bismuth, sodium and quinine, beta-naphthol, salol, thymol, eucalyptol, turpentine, terebene, camphor, chloroform water, and many others. During the course of the last 15 years I have tried most of these remedies and in the majority of instances have been disappointed with their action. Several of them I have tried very thoroughly, reverting to their use again and again in consequence of the remarkably favourable results which have been recorded at one time or another as having attended their employment. I refer more particularly to carbolic acid, salol, and turpentine. As the net result of my experience with these various agents in actual practice I believe that some of them, when given in frequently repeated doses, are capable of exercising a distinctly favourable influence on the course of the attack, even when their administration is not commenced until after the end of the first week. I do not, however, believe they are competent either to cut short the attack or to lessen to any appreciable degree the risk of hæmorrhage, perforation, or relapse, as has been contended by the most ardent advocates of the antiseptic method.

Drugs of the antiseptic class vary very much in their value, some of them apparently being next to useless, and the same drug is not necessarily the most suitable in every case. I am of opinion, after a considerable experience of its use, that the administration of sulphurous acid in from 20 to 30 minim doses every two or three hours is capable of checking fermentative changes in the bowel, with the result that in most cases the tendency to diarrhœa and meteorism is lessened, the tongue remaining moist and the stools being rendered less offensive. A good plan is to give the sulphurous acid in an ounce of chloroform water with the addition of 15 minims of syrup of lemons. Administered in this way the taste is not unpleasant and patients take it readily.

I am inclined to regard the oil of turpentine as a remedy of somewhat greater value. It should be given in frequent doses from as early a date as possible. Its value as an intestinal antiseptic and as a diffusible stimulant is highly spoken of by Sir John W. Moore who is also impressed with its power of relieving respiratory complications; and in that opinion I am disposed to concur. The presence of marked albuminuria or of vesical catarrh, however, should preclude its employment. In the latter case ten grains of urotropine may with advantage be given three times daily, even though the urine be free from typhoid bacilli, but its influence in cystitis associated with the bacillus coli is very slight. I have seen more than one instance in which the continued use of turpentine appeared to be responsible for the development of definite nephritis in a person whose urine previously contained but a slight amount of albumin.

To one of these agents, in my opinion, a somewhat higher value must be ascribed and that is the combination of quinine and nascent chlorine. In its administration I have followed the formula advocated by Dr. Burney Yeo—i.e., 40 minims of strong hydrochloric acid are poured on to 30 grains of powdered chlorate of potassium in a 12-ounce bottle, which is filled up gradually with water, the mixture being frequently shaken as the water is being added so as to absorb the gas as it is evolved. To the solution when made 24 grains of sulphate of quinine are added, and of this an ounce is given every two or three hours until convalescence is reached. Care should be taken that an interval elapses between the administration of the medicine and the next feed of milk, which otherwise is liable to undergo some clotting in the stomach as a result of the admixture. Under this treatment the tendency to intestinal fermentation certainly appears to be lessened and the strength of the circulation is usually well sustained, with corresponding benefit to the general aspect of the case. In some instances, it must be confessed, the result is disappointing, but in cases which come early under treatment the course of the disease is usually favourable.

During the last two years I have treated a series of cases with the essential oil of cinnamon. This agent was suggested to me by Dr. J. Carne Ross of Withington, near Manchester, who had been much impressed with the exceptionally favourable course pursued by several attacks of enteric fever which he had treated with it. It was in view of his anxiety that its value should be tested on a more extensive scale that I was induced to give the cinnamon a trial. The results, as far as they go, have certainly been favourable, but the number of cases in which I have tried the drug is not yet sufficiently large to warrant a conclusion of very general application. Up to Sept. 30th last the number of cases treated with the cinnamon has been 147, not counting a few patients in whom its use had to be discontinued after a few doses, in consequence of its having induced vomiting.[1] Of these 147 cases 14 died, representing a mortality of 9·5 per cent.

It is far from my intention to urge the claims of any therapeutic agent merely because the death-rate in a particular series of 147 attacks happens to come out somewhat lower than the average under other methods of treatment. The drug would have to be tested in a far larger number of cases before any trustworthy inference as to its value could be drawn from a consideration of the death-rate alone. As an illustration of the fallacy of generalising from insufficient data I may mention that of the first 50 cases treated with oil of cinnamon only two died, whereas, amongst the next 50 no less than eight proved fatal. After careful observation of the progress of the individual cases comprising the series I can only express my firm conviction that the influence it exerted in the large majority of attacks was a good one, and that a certain proportion of the patients who recovered would not have done so had the cinnamon been withheld and the treatment been conducted on purely expectant lines.

The favourable effects which were noted as attending the administration of the drug were :—

1. The temperature in the majority of cases ran at a lower level than is customary in enteric fever, the mean of the daily records taken every four hours approximating 101° instead of 102° or more during the full development of the fever. This effect was a good deal more pronounced in cases brought under the treatment at a comparatively early stage of the disease.

2. The patients remained for the most part drowsy throughout their illness, many of them evincing a constant tendency to sleep, as a result of which mental rest was secured and delirium was less frequent. Here, again, the good effect of early treatment was apparent.

3. Intra-intestinal decomposition, as evidenced by abdominal pain, distension, and fœtor of the stools, was controlled to an extent which was really very striking. A considerable amount of success in this direction can usually be obtained with various other antiseptic agents when administered in adequate and sufficiently frequent doses, but that

the oil of cinnamon is especially efficient as an intestinal antiseptic is evidenced by the fact that, with the exception of several patients in whom the condition was present at the time of their admission to the hospital, no single instance of meteorism occurred among the 147 cases which were treated with it.

The soporific influence which cinnamon in full doses is seen to exert in so many patients is a factor of undoubted value in the progress of the attack. Despite the nausea, and even vomiting, which cinnamon occasionally induces when given in too large a dose at the outset the remedy soon established itself in the favour of the nurses, who often remarked on the drowsy, restful condition of mind which resulted from its continued administration—a condition of mind so eminently desirable in a person suffering from enteric fever. To obtain the full effect of the cinnamon a dose of from two and a half to five minims of the essential oil should be given every two hours from the time the case first comes under treatment until the temperature has fallen to the normal. I am in the habit of continuing its administration every four hours during the first week of convalescence and then three times a day for a week longer. The patient, therefore, is kept to some extent under the influence of cinnamon for a period of a fortnight after the febrile stage has passed. It is well, however, to give the drug in smaller doses to begin with so as to accustom the patient gradually to its very pungent taste. By commencing with a dose of two and half minims and increasing it to four or five minims in the course of a few days the likelihood of vomiting being induced by the cinnamon is materially diminished. Care should be taken that the quality of the drug is above reproach. The better quality oil is distilled from the cinnamon bark. It tends to become darker on keeping and its odour is by no means unpleasant. Cinnamon oil of an inferior quality is distilled from the leaves of the tree. It is usually lighter in colour than that prepared from the bark and it is very much less expensive. This inferior oil should never be used medicinally, as patients do not take it so well and its action is probably less efficient.

The nausea and consequent repugnance to the taste of cinnamon which some patients evince may usually be overcome by using some discrimination in respect to the dosage at the commencement, coupled with the exercise of a little tact and persuasion on the part of the nurse. Should, however, the pungent flavour of the drug still continue to be a source of complaint the difficulty can be obviated by giving the oil in gelatin capsules. Some patients, however, do not swallow these cachets very readily and prefer to take it made up in the ordinary way as an emulsion. With a dose of from three to five minims administered every two hours the system soon becomes fairly saturated with the cinnamon. Its characteristic odour is very noticeable in the breath, in the exhalation from the skin, and is readily detectible in the stools in most cases. In the urine, however, the odour of cinnamon can rarely, if ever, be detected.

Being desirous of estimating the antiseptic influence which cinnamon oil is capable of exerting on the growth of the typhoid bacillus one of my colleagues, Dr. A. F. Cameron, kindly undertook an investigation into the question. Working with a 1 per cent. emulsion of cinnamon oil in distilled water containing the minimum necessary amount of mucilage and a 24-hours' broth culture of the bacillus, which agglutinated readily with a 1 in 200 dilution of typhoid serum, the procedure adopted by Dr. Cameron was as follows. A number of tubes containing five cubic centimetres of neutral peptone broth, after the addition of varying amounts of the cinnamon emulsion, were inoculated with a loopful of the culture and incubated at 37° C. These were examined both as regards the appearance of the broth and microscopically at the end of 24, 48, and 72 hours, and the number and motility of the typhoid organisms were compared with the appearances noted in several control broths which, though inoculated at the same time, contained no cinnamon. The results may be summarised as follows. Whereas the broth to which 0·1 cubic centimetre of the emulsion had been added showed no difference from the control at the end of three days in respect either to its appearance or the number or motility of its organisms, that containing 0·2 cubic centimetre of the emulsion by the end of 24 hours was distinctly affected, the organisms being certainly less numerous and their motility less active. Growth was still more inhibited in the case of the tube which received 0·3 cubic centimetre, while the tube which contained 0·5 cubic centimetre of the emulsion at the end of three days showed no growth at all. From these observations it would appear that an appreciable, though slight, inhibitory influence on the growth of the typhoid bacillus begins to be exerted by cinnamon oil in a dilution of about 1 in 2600 and that when its strength approaches 1 in 1000 its antiseptic effect is complete.

Except in respect to the remarkable freedom from meteorism the incidence under cinnamon of the more serious complications of typhoid fever presented nothing very striking. Amongst the 147 cases intestinal hæmorrhage was noted in 17, which is somewhat above the average. Perforation occurred in three, an incidence, on the other hand, which is rather below the mean. As regards the proportionate incidence of relapse it is difficult to speak with certainty. Some recrudescence of pyrexia occurred in 39 cases but in the majority of these the symptoms were not sufficiently distinctive to justify the reaction being regarded as a true relapse. On the whole, however, I am inclined to think that relapses were of more than average frequency. Of the 14 cases which proved fatal the majority may be said to have died from cardiac failure. In eight of the fatal cases the attack had been complicated by hæmorrhage. In view of the fact that in certainly three instances progressive cardiac enfeeblement developed where there was no special reason to anticipate its occurrence, I have recently adopted the practice of giving a grain of sulphate of quinine with each dose of the cinnamon in all cases where a careful daily physical examination reveals a suspicion of circulatory failure, and the result has so far been reassuring.

In the foregoing remarks I have endeavoured to present a brief summary of the general conception and application of certain recognised systems of treatment which are undertaken with the idea of exercising a direct control over the morbid processes concerned in an attack of enteric fever. It now remains to consider what may be termed the alternative method—namely, the treatment of the disease from a passive standpoint—a method which is commonly spoken of as expectant or symptomatic.

The treatment of enteric fever on "expectant" lines implies the recognition of our inability to exercise a direct control over the course of the disease. Having seen that the patient is properly nursed and suitably fed, we are content to adopt a waiting attitude, and while carefully watching for the appearance of any unfavourable symptoms our efforts are confined to attempts at mitigating their severity should any of them threaten to assume a dangerous proportion. To what extent we are justified in adopting this attitude, having regard to the grave responsibility which devolves on us as medical adviser in charge of the case, is largely a matter of opinion. The very conflicting views which have been held upon this much-debated question have been arrived at partly as the result of practice, but to an even larger extent, I suspect, they are founded upon theory. For my own part, I hold strongly to the belief that the adoption of an entirely expectant treatment is not only fallacious in its conception but very mischievous in practice. It connotes a tendency towards *laissez faire* which can neither be in the interest of the medical attendant nor of his patient. The brilliant success which has been achieved by the cold-bath treatment when properly carried out, as instanced by the results I have already quoted, is in itself an overwhelming refutation of the claims of simple "expectancy." While we are forced to admit that at present we know of no remedy for enteric fever capable of neutralising the active infectious processes which are undermining the system and of thus curtailing the attack, as has been found possible in some other specific diseases, it by no means follows that we are powerless to influence the development of certain secondary results which experience has taught us are likely to arise during the course of the illness and materially to prejudice the prospects of a favourable issue. Experience, on the contrary, tends to show that by the intelligent employment of remedies which are theoretically sound we are not only enabled to relieve symptoms which are an actual menace to life, but in some instances we are able to anticipate their full development, if not prevent them altogether. When, then, I am asked on what general lines I would recommend the treatment of a cases of enteric fever my answer is, That in the absence of a specific I would treat the case on symptomatic lines, but that I would employ in addition from the earliest date possible such remedies of either an antipyretic or an antiseptic character or both, as appeared to be specially suited to the

character of the attack and the idiosyncrasy of the individual.

In a great many cases of enteric fever, doubtless, no medicine at all is required, but that unfortunately is a fact which can only be proved by the result. I cannot help feeling, in view of the remarkable success which has been achieved with the cold-bath treatment abroad, that we who have charge of the treatment of enteric fever in hospitals are incurring some responsibility in withholding its use, save in the occasional instances I have already referred to, where the cold bath is clearly inadmissible. The method is attended with certain difficulties, it is true, but I really doubt whether one is justified in allowing such objections to weigh and whether, on the contrary, it is not our duty to impress upon the patient and his relatives the extreme desirability of engaging upon that line of treatment from the onset. In private practice the objections must necessarily carry more weight and I fear that as a routine method of treatment the cold bath is never likely to be regarded with favour.

We not infrequently encounter attacks in which toxæmia is very apparent, cases which, as Sir William Broadbent has pointed out, are characterised by the occurrence of dark, foul-smelling evacuations and fulness of the abdomen at quite an early stage of the attack, coupled with much nervous depression and a high temperature. In such cases antiseptics are especially indicated and it is of first importance that their admini-tration should be commenced as early as possible. It is always well, as a preliminary measure, to rid the lower bowel of its putrid and offensive contents and thus assist in bringing the intestinal tract into as sanitary a condition as possible. To achieve this much-to-be-desired result there is nothing so effective as calomel and in this class of attack I would recommend the administration at the outset of three or four grains of calomel in the case of an adult, followed in a couple of days by another dose of three grains more.

It is, of course, desirable to get this part of the treatment over by the time when it is assumed that ulceration has become established—that is to say, by the middle of the second week; but in view of the serious nature of the condition and the paramount importance of curtailing, where possible, the absorption of toxic products at the surface of the bowel, and having regard, moreover, to the remarkable degree of benefit which is usually secured, I would never hesitate in a case like this to give calomel at a somewhat later stage of the disease, if necessary. Should a free evacuation be not obtained, especially if the abdomen still remains tumid, an enema of soap and water with the addition of an ounce of turpentine should be administered without delay. The improvement in the general aspect of the case brought about by these simple measures is often very striking, apart from the obvious relief to the abdominal condition which they usually afford. The antiseptic influence initiated by the calomel should be maintained by the regular administration every few hours of one of the antiseptic agents I have already referred to. It does not follow that the same drug is necessarily the best in all cases. In some, particularly where distension of the colon tends to persist, the continuous administration of turpentine in ten minim doses will prove especially useful, though it is well to substitute some other antiseptic for it in the presence of marked albuminuria. Taking all things into consideration I am disposed to regard the oil of cinnamon as the most suitable antiseptic to employ in the large majority of such cases. It should be given in from three to five minin doses every two or three hours in the way I have already indicated.

Sir William Broadbent, whose views on the treatment of typhoid fever must always command respect, states that in this class of case he has been impressed with the value of perchloride of mercury given every three or four hours in conjunction with a grain or two of sulphate of quinine, the treatment being continued over a period of several days. I have tried the combination, in a limited number of cases it is true, but in my own hands it has not proved so effective as either the oil of cinnamon or the quinine and chlorine mixture.

There is another class of case in which the cinnamon treatment is especially serviceable—viz., that in which the patient evinces a constant tendency to mental perturbation. The source of his anxiety, perhaps, may be either his own physical condition, or the assumed insufficiency of his diet, or he may be unduly apprehensive as to the welfare of his family, or the conduct of his business during his absence. In circumstances such as these the sedative, and with some persons almost soporific, effect which the cinnamon exerts is frequently of the utmost value. Such patients when fully under its influence will often cease from worrying altogether and pass the major portion of their time in quiet restful sleep. So important is the securing of mental rest to the victim of enteric fever that in a good many cases it is no exaggeration to say that treatment of the mind is the most cogent indication throughout. It is in these circumstances, too, that opium is so valuable and in the event of a patient continuing to worry, despite the well-intentioned efforts of his attendants to distract him, I would never hesitate to give that person opium and to keep him slightly under its influence until the cloud has passed. The objections which are usually urged against the use of opium in enteric fever—viz., its tendency to produce dryness of the mouth and constipation and its liability to mask the early signs of perforation—are certainly not without force; but too much stress should not be laid upon them in view of the enormous gain to the patient which immunity from the fret of bodily pain or continued mental anxiety implies. More often than not the subjects to whom I refer are naturally neurotic, their temperament being apprehensive, fussy, or hysterical; but not necessarily so, however. I have seen the most inordinate anxiety exhibited by men who in their ordinary health are the reverse of nervous. But whether this apprehensive attitude of mind be merely the exaggeration of a normal characteristic or not, the good effect of opium will be equally patent. It is desirable, as a rule, to give the opium in small doses, frequently repeated. Five or six minims of the tincture administered every four hours will usually suffice for the purpose, or better still, the drug may be given in the crude form, a grain of the best Turkey opium being administered three or four times in the 24 hours. Needless to say, in the presence of pulmonary congestion or albuminuria the use of opium calls for the greatest caution.

Another well-recognised variety of enteric fever is that in which the brunt of the attack appears to fall upon the nervous system. Such cases are often spoken of as "ataxic," the most prominent features comprising general prostration, muscular tremor, and early mental involvement, without, perhaps, there being any obvious symptoms of abdominal disturbance. For the treatment of these cases I know of nothing better, if indeed as good, than the administration of quinine and chlorine every two or three hours in accordance with the formula already quoted. I have frequently been impressed with the steadying effect of this combination, even without the assistance of alcohol, of which, however, a small amount is usually called for in the circumstances. The marked nervous apprehension which such patients are prone to exhibit may usually be allayed by giving a little opium. This sometimes takes the form of an active distrust of their attendants, particularly in the case of highly neurotic children.

Whatever view one may hold as to the value of the cold bath or the wet pack as a routine method of treatment there is a consensus of opinion as to the efficacy of direct refrigeration as a weapon against hyperpyrexia and in those grave cases of acute rheumatism in which an unduly high temperature proves refractory to the influence of salicine or the salicylates there is no remedy to compare with the cold bath for its repression. Now, in enteric fever in this country, at any rate, it is certainly exceptional to meet with a temperature much exceeding 105°, though its occurrence is not by any means uncommon in the tropics. When, however, a patient's temperature approaches this level the symptom pyrexia demands attention and the need is emphasised in the presence of restlessness, stupor, or delirium. It is especially in the later stage of the fever when there is likely to be some degree of cardiac dilatation that the continuance of a high degree of pyrexia is fraught with danger.

During the late period of the attack it is seldom wise to put a person into a cold bath unless he has been acclimatised to it by previous experience, but in the early stage there would not be the same objection. As a means of reducing hyperpyrexia in enteric fever I much prefer the cold pack to the cold bath. When given with this object the whole surface of the body from the neck downwards, with the exception of the arms and feet, should be enveloped in a couple of draw-sheets wrung out of cold, or even ice-cold, water. A mackintosh should previously be spread upon the bed, but there is no necessity to use a bed cradle or further covering of any description.

A blanket, however, may be thrown across the legs below the knees and a hot-water bottle encased in flannel applied to the soles of the feet, a provision which will materially lessen the patient's discomfort. The pack should be maintained for from 15 to 30 minutes, its duration and the temperature of the water being regulated by the strength of the pulse and the amount of shivering or cyanosis which it induces. Some degree of shivering, however, must always be expected. On removal of the pack the patient should immediately be wrapped in a warm, dry blanket and as soon as the skin has obtained a comfortable degree of warmth he should be placed between the sheets and covered, preferably with a single blanket. It is always desirable to give an ounce or so of brandy before the application of the pack, since, apart from its primary effect in lessening shock and steadying the pulse, the antipyretic property of alcohol may be expected to supplement in some degree the action of the pack.

In occasional instances the reduction of temperature brought about by the bath or pack proves to be of a very temporary character, the pyrexia in the course of an hour or two attaining its former level. In these circumstances the bath or pack should be repeated, and a dose of from 15 to 20 grains of sulphate of quinine, combined with from 15 to 20 minims of laudanum, administered half an hour or so after the operation is completed. By the administration of quinine it is usually possible to prolong the effect of mechanical refrigeration, a fact well known to Brand and his followers. Liebermeister frequently employed the drug as an adjuvant to the regular cold bath treatment. The effect of the laudanum is materially to augment the capacity of quinine as a temperature depressant, the explanation of which appears to lie in the power possessed by opium as a vaso-dilator in stimulating the cutaneous circulation. In tropical regions where, partly owing to a difficulty in obtaining cold water and in part owing to the frequent presence of a malarial taint, the treatment of hyperpyrexia largely consists in the administration of quinine, the peculiar value of the combination is well appreciated.

The employment of large doses of antipyrin, phenacetin, or acetanilid, though each more powerful than quinine in reducing temperature, is not to be recommended for the treatment of hyperpyrexia owing to their depressant effect on the heart. Acetanilid I regard as especially dangerous, having on two occasions seen the administration of five grains followed by very severe collapse.

Cold sponging of the surface, though capable of reducing pyrexia when properly carried out, is chiefly valuable on account of its sedative influence on the nervous system. As an antipyretic it is inferior to the cold pack and, unless the sponging be carried out with iced water, should not be relied upon in cases where the pyrexia is excessive. For the abatement of restlessness, however, and the promotion of sleep, cold sponging is admirably adapted, especially when associated with pyrexia of moderate degree. On account of its cooling and hypnotic effect it is well to have the patient sponged down every morning with cold or tepid water, to which a few drops of eau de Cologne or spirits of lavender have been added, as a routine procedure and to continue the practice until the establishment of defervescence. Let me add a word of caution against the inefficient and perfunctory manner in which cold sponging is far too frequently carried out. To be of any use the sponge should be charged as full as it will hold and the water effectively sopped or "soused" on to the skin, the necessity of having previously placed a mackintosh under the blanket on which the patient lies being all the while apparent. Merely to wipe the surface over with a well-wrung sponge, as is so often done, partakes more of the nature of a rite than a serious measure of treatment. As a refrigerant the proceeding is next to useless.

In cases where the restlessness fails to give way to cold sponging, properly applied, and sleep remains a stranger, a trial may be made of one of the numerous hypnotic drugs which are available for the purpose. In ordinary circumstances I prefer to give from 30 to 40 grains of chloralamid or half that weight of trional, the drug in each case to be repeated in lesser amount at the expiration of a couple of hours if necessary. In cases where insomnia exists in association with diarrhœa and abdominal pain the preparations of opium are especially useful and from 15 to 20 drops of laudanum or ten grains of Dover's powder are either of them likely to prove a successful hypnotic. Retention of urine is an occasional source of restlessness in men; but this, of course, can be readily relieved by the passage of a catheter. The fact, too, that a condition of rectal discomfort, the result of an inefficient action of the bowels, is sometimes directly responsible for a sleepless night must not be overlooked. In these circumstances a simple enema will usually bring relief and nothing more be wanted.

Now, in respect to the treatment of diarrhœa considerable difference of opinion exists as to the point at which the symptom calls for interference. If it be moderate in amount and unattended with abdominal pain the diarrhœa may well be left alone, provided always that the dietary be suitable and its quantity not excessive. It has been well and truly said that careful daily inspection of the stools supplies the key alike for regulating the diet and for the treatment of diarrhœa in a case of typhoid fever. If in any case the number of the stools exceed four or five in the course of the 24 hours and the amount evacuated be considerable I have no hesitation in saying that the diarrhœa should be controlled without delay, since the continued drain of fluid and consequent deprivation of nutriment which it involves may speedily prove a greater tax on the patient's strength than is consistent with ultimate recovery. The older view that the diarrhœa of typhoid fever is of eliminative value as representing a spontaneous effort on nature's part to get rid of the fever poison and on that account should be allowed to go unchecked is hardly deserving of serious consideration. It is a belief which has had its day but by consensus of modern opinion is now regarded as unsound in theory as it certainly is most mischievous in practice.

Having satisfied oneself from the character of the stools that the feeding is not at fault, the milk, if needs be, being either restricted in amount or peptonised or more diluted, the means of checking diarrhœa which I would recommend be employed first is the administration of a starch and opium enema. A couple of ounces of thin starch gruel, slightly warmed, and with the addition of half a drachm of laudanum, should be given by the rectum immediately after each loose stool. In my experience this treatment is rarely unsuccessful and one or two injections will usually suffice. Should, however, the diarrhœa persist an opiate may next be tried by the mouth and both chlorodyne and Dover's powder are useful preparations. By their power of inhibiting peristalsis, apart from their anodyne properties, they are likely to control the flux, while relieving the colicky pain by which it is so often accompanied. Astringent mixtures containing bismuth, catechu, tannic acid, chalk, and opium have been widely used, as in the treatment of diarrhœa unconnected with typhoid fever, and their effect is often beneficial. The mineral astringents, such as sulphuric acid, acetate of lead, and sulphate of copper, I confess, I do not like and have long since ceased to use them.

The application of an ice-bag to the abdomen is a method which has been employed a good deal of late. It is a remedy of undoubted value, especially when the diarrhœa is associated with distinct abdominal tenderness. Personally, I much prefer the use of a large wet compress made of from four to six layers of soft bath towelling frequently wrung out of cold or ice-cold water. This should be large enough to cover the whole of the abdomen and the edges may with advantage be bound over with a strip of jaconet with the object of preventing the dampness from spreading to the bed. A light wicker cradle should be placed over the patient and over this should be laid a single sheet; but a blanket with the addition of a hot bottle, if desired, may be wrapped around the patient's feet in order to increase his comfort. By this arrangement the cooling effect of the compress is fairly well maintained, since the evaporation of the water is but little impeded. A lengthened experience of its use has led me to believe that of the various therapeutic measures which are employed in the treatment of enteric fever there are few more valuable than the continued application of a cold compress to the abdomen in cases where definite tenderness can be elicited on slight pressure over some part of the surface, whether diarrhœa be actually present or not.

Such tenderness in the absence of marked distension would appear to denote the presence of local peritoneal irritation at the site of one or more of the affected Peyer's patches. The irritation is an indication of danger, pointing at an early stage of the fever to intensity of the inflammatory process at that particular spot, while at a later date it points to depth of ulceration. One is prepared to believe, therefore, that the continued

application of cold to the surface of the abdomen might exert a sedative influence locally on the inflammatory foci in the bowel wall and at the same time tend to control peristalsis, quite apart from the general antipyretic effect which must result from the continued abstraction of heat from a comparatively large portion of the bodily surface. Patients on being closely questioned will often admit that they are conscious of a constant feeling of tenderness or "soreness," not amounting to actual pain, at some particular part of the abdomen, the situation to which it seems to be most often referred being either the hypogastrium or the neighbourhood of the umbilicus. It is in these circumstances that I have found the continuous application of an ice-bag, or, better still, a cold compress, to exert such a favourable influence. For the relief of intermittent abdominal pain, which is usually of a more or less colicky nature, the preparations of opium are probably unsurpassed.

Now, although in the more severe attacks of enteric fever diarrhœa is certainly the rule, the condition which we are far more frequently called upon to treat is its converse, constipation. My own practice is to give a simple enema of soap-and-water, in quantity not exceeding a pint, in the morning of every third day in cases where the bowels fail to act spontaneously. If the quantity of milk allowed in the dietary be not in excess of the patient's digestive powers, this interval is not too long; but the enema may with advantage be given every second day in the event of the stools produced being large or their character not entirely satisfactory. To obviate the constipation which is an almost constant feature of early convalescence one naturally turns to one of the many aperient waters which are so much in vogue at the present day. So long as it is necessary to keep the patient in bed, however, their action after the first day or two frequently proves disappointing, in which case a teaspoonful of castor oil combined with an equal quantity of glycerine may be given with advantage in the early morning and the dose, if necessary, may be repeated once or twice at intervals of an hour with perfect safety.

Meteorism, if present in any marked degree, must always be regarded as a serious condition and its relief in every case should be attempted. Apart from the discomfort, or even distress, to which it usually gives rise, abdominal distension by impeding the descent of the diaphragm is conducive to pulmonary congestion and at the same time is liable to prove a source of serious embarrassment to the cardiac mechanism. Whether or not meteorism, by stretching the bowel wall, is capable of influencing to any extent the risk of intestinal perforation will necessarily depend upon whether the distended portion is the seat of ulceration. Considerable differences are to be found in this respect in different cases, in some practically the whole length of the bowel being more or less involved, whereas in others the distension is almost limited to the large intestine. The former condition is the one more often present in those grave attacks in which a paralytic condition of the bowel at an early date results from the intensity of the typhoid poison, as also where tympanites rapidly develops as a result of general peritonitis. In cases, on the other hand, where the distension is practically limited to the colon, which appears to be more common, it would generally appear to originate in fermentative changes in the intestinal contents rather than a primary paralysis of the bowel wall. Rapid tympanites, however, coming on late in the attack is probably paralytic. In dealing with meteorism, therefore, it is always well to ascertain if possible which part of the bowel is distended, since, in view of such decision, not only may we be able to form some estimate of its immediate danger to life but an indication may sometimes be obtained which may not be without some value in its treatment. That such differentiation is impossible in many cases I freely admit but, on the other hand, as the result of critical observation of the abdominal contour, assisted by careful percussion, it is often possible to arrive at an opinion as to whether or not the colon is distended.

If the diet be carefully regulated in relation to the patient's digestive power, meteorism is not likely to be a frequent symptom. This is particularly true if an efficient antiseptic treatment has been instituted from an early stage of the illness and the value of the oil of cinnamon in this respect I have already referred to. But should distension arise in spite of every care and there be reason to believe that the small intestine is mainly concerned in its production, the administration of opium in moderate doses and the application of an ice-bag to the abdominal wall are the means most likely to prove successful. In severe cases where tympanites develops rapidly at an early stage of the attack a full dose of opium should be at once administered. In my experience the value of drugs of the antiseptic class—such as creasote, sulphurous acid, salol, sulphocarbolate of sodium, &c.—for the relief of tympanites when once it has arisen is almost *nil* except in certain instances where the stomach is the seat of distension. Where, however, there is reason to believe the meteorism to be mainly, if not entirely, due to flatulent distension of the colon enemata of soap-and-water containing an ounce of turpentine are usually of the greatest value. In these circumstances the ice-bag had better be withheld and opium too, except the pain continues. It is in these cases that the passage of a long tube through the sigmoid flexure may be expected to afford some relief, though the procedure is by no means always successful.

In the treatment of enteric fever the pulse should always be regarded as supplying an indication of the highest value, as, indeed, might be expected in view of the fact that in a large proportion of fatal cases, at least a half, death may be said to be directly due to circulatory failure. It is because of its power in reducing the mortality from what might be called "the pyrexial sources of death" that Hare and others who are strong in its support insist on the value of the cold bath treatment. Foremost among the causes which must be held to fall within this category is cardiac failure, though cerebral exhaustion and pneumonia must also be included. That the pulse should show some loss of strength as the fever progresses is only natural, and in the event of such loss being moderate no special treatment is required; but should the weakness become more pronounced, as evidenced by undue rapidity in relation to the temperature, dicrotism, or especially if a tendency to irregularity be noted either in force or rhythm, the cautious administration of stimulant is usually advisable. The form of alcohol best suited for the purpose, as a rule, is either brandy or whisky, of which, however, the quality as also the quantity should be regulated with discretion. In some cases the feebleness of pulse is associated with marked ventricular dilatation, in which case pulmonary congestion is very prone to arise and seriously to prejudice the issue. The good effect of digitalis in these circumstances is usually apparent and it may with advantage be combined with strychnine. A certain amount of benefit, no doubt, would be derived from the administration of alcohol alone, but its influence often appears to be but temporary and for producing a lasting effect it cannot compare in value with either strychnine, quinine, or digitalis.

Without for a moment desiring either to underrate the value of alcohol in cases where there is need of temporary cardiac reinforcement or to question its power to exert a steadying influence upon an exhausted nervous system, I rank myself with those who hold that in most cases of enteric fever not only is alcohol not required but that its employment is occasionally distinctly harmful, even when given in quantities which would not be considered excessive. The administration of a few ounces of alcohol, for instance, will sometimes markedly increase the restlessness in the case of a delirious person whose pulse is good and whose circulation is well sustained, especially when the patient is young and unaccustomed to take stimulants. Its use in these circumstances would be clearly injudicious and in the presence of intestinal hæmorrhage its employment, except the case be desperate, would of course be inadmissible. The special indications which, I think, legitimately demand the use of alcohol in typhoid fever may be enumerated as follows. Constant delirium and sleeplessness associated with muscular tremor, feeble circulation, and a dry brown tongue; undue weakness of the pulse without other sign, as already described; cardiac dilatation, cyanosis, pulmonary congestion, and pneumonia; hyperpyrexia, excessive diarrhœa, and intestinal perforation. Alcohol, moreover, may be given with advantage in the case of elderly persons and to patients who are taking their food badly, as also to those who are the victims of a persistent feeling of depression. In this latter instance the best form in which to administer the alcohol is a good champagne, though, as I have already said, either brandy or whisky is generally the most suitable stimulant in ordinary circumstances—at any rate, during the pyrexial stage of the illness.

Though I fear it is impracticable within the confines of a

single lecture to treat of all the exigencies which are liable to arise in the course of typhoid fever, no review of its treatment, however brief, could be regarded as satisfactory which did not contain some allusion to those two most grave accidents which always threaten—viz., intestinal hæmorrhage and perforation. In respect to any power they may possess of arresting a hæmorrhage in the bowel, it must be confessed that drugs have proved to be but broken reeds in practice, and the dictum generally credited to a late very distinguished physician that "hæmorrhage from the bowels in typhoid fever must be allowed to cure itself" is as true to-day as when the words were spoken; but if, on the other hand, the saying be held to imply that by judicious management of the case we are powerless to assist in the attainment of this much-to-be-desired result, such inference cannot be too strongly contradicted.

The importance of absolute repose, alike of body, bowel, and mind is universally acknowledged. For the attainment of physical and mental rest we must largely rely on the care and common sense of a competent nurse and obedience on the part of the patient; whereas rest for the ulcered and bleeding bowel can be secured by the prompt administration of a full dose of opium. I much prefer the use of opium in ordinary circumstances, but should the patient's state be really urgent the hypodermic injection of morphine may be substituted with advantage.

Since a state bordering on syncope must be held to provide the condition most favourable to the cessation of hæmorrhage everything calculated to stimulate the circulation should for the time, of course, be studiously avoided. Absolute abstention from alcohol, beef-tea, and stimulant meat extracts should be rigorously enjoined and for the like reason and in order to avoid exciting peristalsis the amount of nourishment should be reduced to the lowest possible point consistent with maintenance of the physical powers. The situation in severe cases is frequently a difficult one and we are apt to find ourselves in dangerous waters. We are confronted on the one hand by the "Scylla" of possibly fatal syncope and on the other by the "Charybdis" of additional hæmorrhage and to steer a safe course between them may call for the highest qualities of seamanship. The necessity for avoiding stimulation is universally recognised, but I think, perhaps, the influence which is exerted by the complete deprivation of fluids in keeping down the blood pressure and arresting hæmorrhage is hardly so well appreciated as its great importance warrants.

The practice of giving astringents by the mouth in the belief that they will exert a direct styptic effect on the bleeding vessel in the lower part of the ileum is obviously futile, but the use of physiological hæmostatics in order to attain this object indirectly has possibly more to recommend it. Ergot, ergotine, hamamelis, and hazeline have been widely employed, and still are, for the purpose. Extensive experience of their use, however, has led me to regard them as almost, if not entirely, worthless. Adrenalin chloride in frequent doses, however, I still employ in cases where the pulse tension is particularly low, since its administration I have sometimes thought effective. But whether any drug of the vaso-constrictor class, such as ergot or adrenalin, really plays any part in checking intestinal hæmorrhage is exceedingly doubtful. Unfortunately, we have no opportunity of observing their direct effect, but having regard to the rise in the general blood pressure which follows their administration it is difficult to avoid the suspicion that if they produce any result on the bleeding at all it should be to increase it.

In virtue of its undoubted power of augmenting the coagulability of the blood, the administration of calcium chloride in ten-grain doses every three hours is deserving of a trial, particularly in cases where the hæmorrhage, though slight, appears to be continuous. The application of an ice-bag to the right iliac region is apparently of real benefit in persons whose abdominal wall is not unduly thick; and in proportion as the affected part of the bowel is near the surface its influence in controlling peristalsis and in constricting the intestinal vessels is likely to be of value.

Having seen that the patient receives a full dose of opium and that an ice-bag is carefully applied to the abdomen our treatment of intestinal hæmorrhage may be summed up in the single word "precaution"; and of the various measures we adopt with this in view I believe *the complete deprivation of fluids*, excepting an occasional fragment of ice, to be the most important.

Now, with regard to the treatment of that dread complication intestinal perforation, there are probably few physicians at the present day who would hesitate to advise operation as the only means of saving life. The only points on which some difference of opinion is likely to exist are as to the cases which are suitable for operation and the time at which it should be performed. Personally, I am in complete agreement with those who hold with Finney that a moribund condition of the patient should be the only contra-indication. I have never yet come across the case in which recovery has ensued when once a diagnosis of perforation has been deliberately arrived at, although one knows that some instances of apparently undoubted perforation have been recorded in which success has been attained as the result of purely medical treatment. I do not think it is fair to accept a *post hoc, ergo propter* explanation of these cases and question the accuracy of the diagnosis on the strength of eventual recovery. I prefer to believe that in very exceptional circumstances a more or less localised peritonitis of perforative origin may be recovered from, but that the occurrence is so exceedingly rare as to justify one in entirely ignoring its likelihood when called on to decide upon the treatment.

Assuming the diagnosis of perforation to have been made and the necessity for operation admitted the point of next importance to decide is the time most favourable to its performance. The answer to this question is supplied in the old adage, "There is no time like the present." The teaching of Keen in this respect—viz., that the second 12 hours after perforation represents the time most favourable to operation—has carried considerable weight, it being held that recovery from the primary shock had better be awaited. The accumulated experience of the last few years, however, has clearly shown that if surgical treatment be postponed until reaction shall have set in, not only may the chance of a favourable issue have been allowed to slip, but the only opportunity for operation also.

The high importance, then, of immediate operation once admitted, the value of early diagnosis in the attainment of the best results will be apparent. Of the various symptoms which are recognised as indicative of the onset of perforation the occurrence of sudden pain at some particular spot in the abdomen is properly regarded as the most suggestive, and if this be quickly followed by local tenderness and some degree of constitutional disturbance the suggestion is greatly strengthened. Unfortunately, in something like 20 per cent. of cases the access of definite pain is wanting, in which case perforation in its initial stage is far more likely to escape detection. In the absence of local pain, however, the presence of even slight muscular rigidity, which from previous examination is known to have newly arisen, must be regarded as an indication of the highest value, and its import is greatly strengthened in the event of any increase in the pulse-rate being detectible at the same time. The great value of this sign has been attested by Harte of Philadelphia who, when referring to the importance of individual symptoms in the recognition of perforation, speaks of muscular rigidity as the "keynote to diagnosis."

To those who have seen much of enteric fever the fact is well recognised that we may encounter cases of perforation in which every local symptom usually associated with the condition is conspicuous by its absence, while the general aspect of the case in other respects may be quite characteristic. Apart from the evidence which may usually be derived from a careful examination of the abdomen, I have come to regard the facies as perhaps the most valuable indication. To one who is familiar with the patient's usual appearance a slight but distinct change in the facies may be apparent which is exceedingly difficult to describe but which, especially when occurring with a feeble running pulse, may serve to show the cloven hoof in a way which nothing else will. When in addition there is present, or has recently been noted, some degree of shivering the inference that perforation has occurred is very strong indeed. The frequency of shivering and its diagnostic importance as an early sign of perforation were strongly emphasised by Dr. E. W. Goodall in a very thoughtful and instructive paper on Intestinal Perforation which he read before the Hunterian Society last April. I confess that I had not previously appreciated the value of this sign. It is easy, however, to be wise after the event and I can now recall the occurrence of shivering more than once in cases which had perforated but in which at the time no particular stress had been laid on its occurrence. As confirmatory evidence of perforation obliteration of the liver dulness and the presence of fluid in the peritoneum are, of course, unrivalled, but in neither case are

they likely to be apparent until a fairly confident diagnosis has been attained from other signs.

It is a golden rule in the treatment of typhoid fever to make a careful examination of the abdomen daily, for in proportion as our last examination has been recent so are we in a better position to appreciate the moment when any change in its condition may have occurred. Accuracy of diagnosis is always desirable, but in view of the greatly improved results which have been attained of late it is better to recommend an unnecessary laparotomy than to allow a patient who has perforated to die without receiving the chance which operation affords. According to the figures published by Harte in January last, referring to 332 recorded cases of laparotomy after perforation, the recovery-rate has increased during the last 20 years from 10 to 31 per cent., that for the whole series being 26 per cent.; but whether the recovery-rate of all cases in which the operation has been performed is really as high as this is certainly rather doubtful.

On bringing these remarks to a conclusion I must express my regret at having been able to adduce so little that is new and still less that is original. We have arrived at a stage, it seems to me, beyond which any material advance in the treatment of enteric fever must be sought in biological sources, and when we regard the number of earnest workers in that particular field and the success which has attended their efforts in other directions the future for enteric fever appears to be not without promise. While fully alive to its many deficiencies I venture to hope that a record of personal impressions as to the value of various therapeutic measures which I have had occasion to employ during the course of some 16 years' close association with the disease may prove to be of some little assistance to others who are equally interested in its treatment.

The Horace Dobell Lecture

ON

THE LIFE-HISTORY OF SAPROPHYTIC AND PARASITIC BACTERIA AND THEIR MUTUAL RELATION.

Delivered before the Royal College of Physicians of London on Nov. 22nd, 1904,

BY E. KLEIN, M.D., F.R.S.,

LECTURER ON ADVANCED BACTERIOLOGY AT ST. BARTHOLOMEW'S HOSPITAL.

MR. PRESIDENT AND GENTLEMEN,—Before I enter upon the subject of this lecture I have to offer my thanks to you, Sir, and to the Censors of the College, and to express to you and to them how deeply sensible I am of the honour you have conferred on me by selecting me to deliver this, the first, lecture recently endowed by Dr. Horace Dobell. According to the terms of the endowment the lecture should consist of "a summary of our present knowledge concerning the ultimate origin, the evolution and life-history of bacilli and other pathogenic micro-organisms," and in conformity with these terms, and anxious to place the most important problems covered by these terms in as concise a form as possible, I have chosen for the title of this lecture "The Life-history of Saprophytic and Parasitic Bacteria and their Mutual Relation," and I shall have opportunity of indicating the reasons that induced me to substitute the term saprophytic and parasitic for non-pathogenic and pathogenic bacteria respectively.

The questions when and how and from what parent bacteria first became evolved, when and how they differentiated into such as do not and such as do cause disease, cannot be separated from the wider question of how and when the manifold species of living beings first appeared, how and when disease became first evolved, questions which, although they offer attraction to the speculative philosopher, are for obvious reasons not capable of direct answer. In science as in medicine we are dealing with the phenomena as they are, observing and recording facts as they present themselves to our senses aided by instruments of precision, and it is from the observed facts that conclusions are drawn, that deductions and generalisations are made, and the basis for further advances in the same direction is established.

The subject I have to deal with will best be considered under the following three heads: (1) morphological; (2) chemical; and (3) physiological.

1. MORPHOLOGICAL.

What are bacteria? Since von Naegeli's and particularly F. Cohn's fundamental researches[1] into the morphology and development of bacteria these micro-organisms are considered as a special order amongst fungi, being spherical, oval, or cylindrical cells without a nucleus, inclosed in a sheath, devoid of chlorophyl and multiplying by first enlarging and then dividing by simple fission, hence their name schizomycetes. Amongst the bacterial species some have been shown in which the individual cells are capable of concluding their life cycle by forming in their interior spores of a permanent character, which spores, after the total disappearance of the remainder of the cell, become free and are capable of preserving for long periods their germinating power and consequently of starting new generations, notwithstanding various inimical influences of locality, temperature, &c., surrounding them. These are some of the fundamental facts which are found recorded as the A B C, as it were, in all text-books dealing with bacteria.

A considerable number of observations have, however, been recorded since Cohn's time. In the first place, the question has to be asked whether, and to what extent, bacteria are comparable to vegetable cells. That some bacteria, like the constituent elements of the higher fungi and of higher plants, are possessed of a cellulose[2] membrane is a fact which admits of no doubt; a simple micro-chemical (iodine) test proves this. Another point of similarity to the cells of higher fungi is this—viz., that, as in the constituent elements (both young and old) of the higher fungi, vacuoles or drops of fluid appear in the protoplasm also of some species of bacteria in certain phases of their growth and particularly when growing in media much diluted by water—i.e., in which the nutritious elements are scanty and reduced in amount. This appearance of vacuoles in the protoplasm and consequent segregation of its chromatic parts are well known to occur with constancy also in stained specimens of some species of bacteria when growing under the most favourable conditions, so much so that thereby they are provided with a definite character; such is the case with the bacillus typhosus and some species of the bacilli of the coli group, bacillus pestis, bacillus diphtheriæ, and some species of proteus (bacillus termo Cohn), bacillus lactis, and bacillus Friedländer. Of all these species many individuals growing under favourable conditions show a vacuole occupying the entire centre and at each end the remains of the chromatic or stainable substance, so that in stained preparations the appearance of "polar staining" becomes manifest. Amongst the bacteria of the species just named, all capable of growing in the animal body, this polar position of the protoplasm in stained specimens is a conspicuous feature.[3] In the bacillus diphtheriæ a less regular form of vacuolation occurs, inasmuch as in the longer or cylindrical individuals several vacuoles occur in linear series and in consequence the chromatic part of the protoplasm is distributed along the rod in the form of separate masses—separate, owing to the intervening vacuoles.

It is clear from these facts that in these respects a resemblance is noticeable between the cells forming the threads or mycelium of the higher fungi (saccharomyces or oidium, aspergillus, penicillium, mucor) and the bacterial cells. A further analogy is offered by the cells constituting the threads of streptothricheæ, including actinomyces, which as to their morphology and mode of growth may justly be considered as intermediary links between the mycelial threads of the hyphomycetes and of those bacteria which are capable of forming threads.

---

[1] Zeitschrift für Wissenschaftliche Botanik, vol. ii.

[2] Fisher denies the cellulose nature of the sheath, but while this may be true of some bacteria it certainly is not applicable to all species: bacillus tuberculosis, bacillus amylobacter, and some others possess a cellulose sheath readily demonstrable.

[3] Fisher maintains that the polar staining is not due to the presence of a real vacuole but is an artefact. Against this view may be cited the fact that this polar aggregation of the protoplasm can undoubtedly be observed in the fresh and living state of some bacteria—e.g., the bacillus pestis and bacillus coli—and further that in some individuals the vacuole is not situated in the centre but at one or both ends of the bacterial rod.

Nucleus.—The next point deserving attention is the question of the nucleus, and here we enter upon a field of observation which appears to me to throw a good deal of light on the position of bacteria in general. It is well known that the cells of the hyphomycetes are devoid of any organ which can in any sense be compared with the cell nucleus of the higher plants. Even the largest cells of the former, the size of which in some instances is not inferior to that of the latter, fail to demonstrate any nucleus; chromatic granules and chromatic masses of various sizes and shapes are discernible but nothing comparable to a cell nucleus. The same holds good for streptothricheæ. Now as regards some of the larger forms of bacteria—bacillus megatherium, bacillus mesentericus, bacillus anthracis, and others, appearances after various staining reactions have been described (Babès, Neisser, Nakanishi, Preisz,[4] and others) which have been interpreted as denoting the presence of a cell nucleus. The facts, briefly stated, are these. When living bacteria are rapidly dried in very thin films and stained their protoplasm shows differentiation of at least two substances, one of which, generally situated centrally or nearly so, stains more deeply or in a different tint than the peripheral portion. This fact can be demonstrated, as was well shown by Babès, Nakanishi, and others, on almost all the different species, cocci, bacilli, and vibrios. But it has to be added that this differentiation is not only not constant but it is subject to great variation as to the nature, amount, and position of the differently stained parts; that no decisive conclusion can be drawn, certainly no comparison can be made, with what is the case in cells provided with a real and definite nucleus.[5] All that can be maintained is that under certain conditions of staining different parts of the cell protoplasm possess different chemical affinities to the dye—affinities which in some instances seem to indicate the presence of "granules" differing from ordinary protoplasm. No better illustration can be offered than that of the bacillus diphtheriæ and other diphtheroid bacilli; when the living bacilli of these species are treated with certain methyl blues the protoplasmic chromatin in some cells assumes not only the deep blue colour, but in addition here and there a chromatic particle or globule takes a bright pink colour (metachromatism); such a bacillus shows one or more blue chromatic particles and in the centre or near one or the other end a bright pink globule. It would be extremely hazardous to consider this latter as a nucleus simply because it possesses a chemical affinity to the dye different from the remaining chromatin.

That such a conclusion is not justified is proved if we take into account the well-established fact that in the cells of various animal tissues metachromatism of a similar nature—i.e., different chemical affinities—is observed in the chromatic substance of protoplasm under normal and abnormal conditions, in leucocytes, epithelial cells, and ganglion cells. By Borrel's stain a striking difference of chemical affinity to dyes is shown in the different parts of the protoplasm of the cells of cancer, for instance. All this has no necessary connexion with a nucleus.

A further illustration of a well-known character is presented by the Neisser's granules in diphtheria bacilli and some other diphtheroid varieties—though in the latter but rarely. These granules, occurring more than singly in the cells, are neither in arrangement nor in position at all comparable to nuclei and are not so regarded by any observer; they merely denote portions of the chromatic substance chemically different from that of the general cell protoplasm, just as, for instance, in certain bacilli and cocci which are Gram-positive the protoplasm has a different chemical affinity to dyes than that of Gram-negative bacterial species. We therefore conclude that at present no data are at hand which would justify our ascribing to bacteria a nucleus—i.e., that definitely shaped and definitely placed, well-defined central substance which in the cells of higher plants and of animals plays the part of division centre. If further proof were needed it is found in studying bacteria during division. Here no appearances can be observed which would denote a division of the alleged nucleus. In this respect, then, the bacterial cell compares with, and belongs to, the same group as the cell constituting the hyphomycetes and streptothricheæ and is not comparable with the cells of higher plants.

Spores.—The formation in certain species of bacilli of spores, conspicuous by their shape, chemical reaction, and position within the cell protoplasm and by their high resistance to inimical influences, is a subject which since Cohn's researches has received a great deal of attention. The gradual growth and development of these glistening oval or spherical "endospores" enveloped in a sheath probably of a fatty nature—to which the spores owe their hardiness and inability to stain with ordinary dyes—in the cells of certain bacilli, their definite position within the cell differing in different species—central in some, peripheral in others, and quite terminal in still other species—are points which have been well worked out and are recognised in all text-books. Thus in hay bacillus, in anthrax bacilli, in bacillus mesentericus, and other aerobic species the spores are oval glistening bodies situated in the centre of the cells, thicker than these latter, and therefore causing in the course of their development the change of the cell from the cylindrical form into that of a spindle. In bacillus tetani, in bacillus cadaveris sporogenes, the spores are oval glistening bodies situated quite terminally and being thicker than the rest of the cell change this latter into a form known as "drum-stick form," while again in some other anaerobic bacilli the spores are near the central portion (bacillus œdematis maligni, bacillus enteritidis sporogenes); in others they are situated peripherally—i.e., nearer to one end, e.g., bacillus Chauveaui and others. Further, in all these instances it is known that in order to stain the substance of the spores it is necessary to react on them by great heat (directly by the flame or staining them in the boiling dye) whereby the outer envelope is either destroyed or altered. All these are points which are readily observed and about which there is no difference of opinion but there are a good many other points which as yet have not received sufficient attention and amongst these two stand out prominently: (1) what is the exact and intimate mode of their formation; and (2) what are the conditions necessary for their formation?

The sum total of all observations concerning their formation amounts to this: at one time in the course of the life of a given bacillus the protoplasm enlarges—i.e., the thickness of the bacillus increases, the bacillus becomes more transparent except at one spot where a condensation of the substance occurs; then this denser spot assumes a glistening appearance and changes into a bright globule (situated centrally or peripherally as the case may be) which, while gradually increasing in size, becomes oval or spheroidal in shape according to the species; in this phase the rest of the cell protoplasm becomes fainter and fainter, so that the spore by its size and glistening aspect represents the most conspicuous part. That the original cell sheath does not form an integral part of the spore but that this latter has its own capsule is proved by the fact that in the final stage the fully developed or adult spore passes altogether out of the cell in which it was formed while the sheath of the original cell may still be distinctly recognised after the shedding of the spore. Now, when studying carefully the formation of spores in some species, the following observations can readily be verified: while certain individual bacilli of a given species (bacillus anthracis, bacillus filamentosus, and bacillus subtilis) enlarge, becoming thicker and more transparent, and in them the spore formation is completed in the afore-stated manner, there are seen other bacilli of the same species and sometimes even in the same preparation in which the initial glistening globule, which in others continues to grow till it reaches the size of the adult spore, remains small and does not grow up into the oval spore. These globules do not stain in the exact manner of spores and in some bacilli are double, nor can they be confounded with vacuoles because they are solid bodies reacting in the manner of fat globules or of some substance similar to fat and behaving more or less like acid-fast substances, such as furnish the tubercle bacillus with their well-known power of withstanding nitric acid (Preisz). The bacillus anthracis, which has been carried through many generations in the laboratory in artificial culture and in which the formation of full-sized spores has become sparse, shows the above appearances very strikingly. It is well known that in many sporogenous species, particularly of the pathogenic kind, by the continued transference on artificial media the formation of real spores is gradually interfered with, so that sooner or later the microbe may become altogether asporogenous.

[4] Preisz: Centralblatt für Bakteriologie, vol. xxxv. An excellent summary and bibliography are recorded by A. Grimme in Centralblatt für Bakteriologie und Parasitenkunde, vol. xxxii.

[5] The fact of the presence of pink granules in bacteria after staining with Romanoffsky's stain is by some interpreted to indicate the presence of "nuclear chromatin"; this may or may not be the correct interpretation; it does not, however, justify the acceptance of a true well-defined nucleus.

In other species, e.g., different clostridia, bacillus cadaveris sporogenes, the enlargement and greater transparency of the cell protoplasm—central in clostridium, terminal in bacillus cadaveris sporogenes—are observed, but instead of a spore being formed in the enlargement a central condensation of the substance takes place in it which stains somewhat differently and more deeply than the rest of the latter (Preisz); it may even assume the fatty glistening aspect, but here the process ceases, no further growth and enlargement of this body occur; it does not stain after the exact manner of spores—being less liable to retain the first stain and being less acid-fast; moreover, it has not the power to germinate and to give origin to a new bacillus.

These observations justify us in concluding that we are dealing here with an "abortive spore formation"—i.e., an arrest of the process. It falls short of the development of the essential part of the spore, in so far as of the constituents of a real spore only the fatty matter has been formed but not the true living substance capable of subsequent germination, which process is, after all, the essence of the nature of a spore. It is this power of *germination* in the sense used by botanists which must be considered as the determining factor in what is and what is not a true spore, and we shall see that an organism merely capable of preserving its vitality in adverse circumstances does not justify us in considering it as a spore.

It had been at first assumed (Buchner) that spore formation in the sporogenous bacilli depends in a given culture on the consumption of the nutritive substances below a certain point—that is to say, when, owing to the continued growth and multiplication of the bacilli in a given amount of nutritive material this latter is becoming exhausted, the bacilli close their life-cycle and form their permanent seeds or spores. Such a view would, of course, coincide with a teleologic or useful procedure, inasmuch as when the dearth of nutritive material consequent on its exhaustion by the host of the progeny makes itself felt the account of the bacilli is closed, as it were, and in order to preserve their species they proceed to form their seeds. They differ in this respect from the non-sporogenous species which with the exhaustion of the nutritive material cease growing and multiplying and gradually die off without any provision being made for insuring the preservation of the species unless new nutritive material be accessible.

But the above explanation is not borne out by observation, the contrary being readily noticed. Bacilli anthracis taken from an animal which had recently died from virulent anthrax and grown under suitable conditions as, for instance, on the surface of solid nutrient media like agar or solidified blood serum, show in many cells fully formed typical spores as early as 24 or 36 hours or less, growth and multiplication of bacilli in general going on briskly all this time and for some days later, and this spore formation not only happens in the central part of the colony, which one might perhaps suspect of being the part where exhaustion of nutritive material is making itself first felt, but it can be observed quite unmistakably at the margin of a colony—i.e., at the growing off-shoots, and it was, in fact, so observed first directly under the microscope by Koch on the threads of the bacilli growing out of a piece of spleen of a mouse which had died from anthrax.

The same, viz., early spore formation, occurs in bacilli Chauveaui, in the sanguineous exudation at the seat of infection of an animal ill with symptomatic charbon, and also in malignant œdema, that is to say, long before any exhaustion of nutritive material can be thought of there are bacilli which already form spores. Observing young and growing colonies of, for instance, bacillus subtilis, bacillus mesentericus, bacillus carnis, and other sporogenous bacilli on the surface of agar plates, spore formation can be observed already at the earliest date long before any exhaustion of nutritive material could be assumed. That spore formation can be prevented by various agencies has been proved by a large number of observations—e.g., the metabolic products of the anthrax bacilli generated in culture media, the addition to the culture media of substances like glycerine, formate of soda, or glucose, the absence of oxygen, the dilution of the medium (serum) by water, and other conditions. Selter[6] records a number of important observations in this direction and gives a good summary of the bibliography of the subject. At present we are driven to the conclusion that bacilli having reached maturity conclude their cycle by spore formation, and in this respect differ essentially from non-sporogenous bacteria in which the whole life is of a more uniform nature, consisting in growth and simple division lasting as long as the conditions of growth are favourable for it.

It might be said that inasmuch as the same species which under one condition—e.g., bacillus anthracis with free access of oxygen, i.e., growing on the surface—is capable of forming spores fails to do so when placed under a different condition (in the depth of the fluid, in the animal body, in gelatin which is liquefied by the growth—i.e., where there is a deficiency of free oxygen), the spore formation can hardly be of a fundamental distinction as just suggested, and the case of certain yeasts might be quoted where the spore formation (asci), for instance, is observed in certain species (saccharomyces) only, while in others (torula), when growing under the same conditions, this is not the case. I do not think this comparison at all proves the point; on the contrary, it shows that saccharomyces capable of forming asci are fundamentally different from pure torulæ which do not form spores. I would therefore claim for those species of bacilli which are capable of forming spores a separate position amongst the bacteria, as separate as amongst the mycelial fungi the sporogenous species, like mucor, aspergillus, or penicillium, are from the tribe of oidium. In fact, the sporogenous hyphomycetes are good illustrations for the above-mentioned phenomenon—viz., that the same microbe is capable of forming spores under one condition but fails to do so under another, for it is well known that these same hyphomycetes form their spores only when growing on the surface but fail to do so when immersed in a fluid, in the depth of which they show copious growth of the mycelium only but do not form spores. Whether in the sporogenous bacilli something of an interaction of sexual elements, as sometimes occurs amongst the mucorinæ, or of elements of a different nature is required for the establishing and creating the spore is a subject well worthy of further attention. The fact above mentioned of deficient progress, or rather want of further progress, observed in the "abortive spore formation" is not incompatible with such a view.

Amongst the species of bacteria in which spore formation has not been observed there is one group which seems to stand out more prominently, because owing to its high resistance to inimical influences—drying and heat—it is credited with the possession of spores—namely, the group of acid-fast bacilli, notably the bacillus tuberculosis. That the bacillus tuberculosis has a considerable power to resist the influence of obnoxious agents—disinfectants, heat, drying—has been known since Koch's first investigations in 1882. The tubercle bacilli of sputum, for instance, withstand drying to a high degree. When dried on wood, linen, or on paper and kept in the dry state for many weeks and then tested by inoculation on guinea-pigs they are still found to be in a living and active state—i.e., are capable of causing general tuberculosis in the infected animals. Similarly the tubercle bacilli of sputum withstand heating to from 80° to 90° C. for several minutes. In both these respects, therefore, they behave unlike non-sporing microbes—which are known to succumb to temperatures far below 80° C.—but resemble the spores of sporogenous bacilli. And it is chiefly for reasons of this character that the tubercle bacilli have been credited with forming spores. But the most careful microscopic examination of the tubercle bacilli of sputum or of other tuberculous deposits or of artificial cultures fails to show spores such as occur in the real sporogenous bacilli; the unstained spaces between the stained granules—at first thought to be unstained spores—have long been recognised as spaces free of chromatic substance.

But the high resistance of tubercle bacilli being a fact it is feasible to explain it by ascribing it to the waxy substance—that is, the part of the bacilli which furnishes it with the acid-fast character. As a matter of fact the fatty (waxy) envelope of the real spore (of sporogenous microbes) is, according to many accounts, the cause of the high resistance of the spores, and, further, spores of some bacillary species[7] treated in the same way for acid-fast condition as the tubercle bacilli show the same or similar staining characters as the latter. It will hardly be said that all acid-fast parts of the tubercle bacillus—and as a matter of fact the whole of it is acid-fast—are spore, for then we should

[6] Centralblatt für Bakteriologie und Parasitenkunde, vol. xxxvii.

[7] E.g., spores present in the contents of the large intestine.

be driven to make the highly improbable supposition that all tubercle bacilli and the whole of the individual bacilli in sputum and tuberculous deposits and the like are spores, apart from the morphological difficulties which decidedly militate against such a view.

Oidium forms of bacilli.—During the last ten years or so a good deal of attention has been directed by morphologists to the appearance of branched forms amongst some species of bacilli and to the clubbed ends of the branches, and various theories have been put forward as to their meaning. Thus, Nocard and Roux, Klein, Fishel, Coppen Jones, and others have described such forms of the tubercle bacilli. Maffucci ascribed this to a special and differential character of the avian[8] tubercle bacilli; Klein, Fraenkel, and others observed it on the diphtheria bacilli. I have also seen it on diphtheroid bacilli of other species. Lehmann and Neumann went so far as to group such bacilli as a special group separate from other species of bacilli and more related to streptothricheæ and actinomyces. But such a view it is difficult to uphold, since branched forms may be, and have been, observed on a good many other species, notably when grown in cultures containing a large percentage of sodium chloride; so much so that it appears that such branched forms are quite of common occurrence. Looking carefully at the typical and well-preserved branched forms of tubercle bacilli or at a branched form of a diphtheroid bacillus (bacterium muris, Klein) the resemblance between it and certain forms of an oidium (oidium albicans, thrush) is sufficiently striking.

It requires no stretch of imagination to conclude that these species of bacilli, which under ordinary conditions of growth are made up of non-branched, rod-shaped, or cylindrical bacilli, under other conditions are capable of reverting to, and of assuming forms of, an atavistic type, a reversion not unknown amongst plants and animals. If this be the correct interpretation it would lead us to suppose that these bacillary species have at one time of their evolution been, not what we now consider them to be—viz., typical species of bacilli—but something akin to a saccharomyces form of blastomycetes—that is to say, they were originally derived from a parent stem of the nature of a saccharomyces mycoderma.

There are in support of this view two further points: 1. It is commonly assumed since Naegeli and Cohn, and is to a large extent borne out by direct observation, that the multiplication of all species of bacteria (cocci, bacilli, and vibrios) consists in the growth and enlargement of the single cell and subsequent division of this into two, each of these again enlarging and dividing into two, and so on. As just stated, this in a general way is no doubt correct and the appearances presented by bacteria, either when directly watched or when taken from cultures and stained in films, justify such a conclusion. But a careful examination of such specimens will reveal additional appearances which cannot be explained in such a simple way and which suggest some modification of the above general interpretation. Taking, for instance, certain species of micrococci, it is not at all difficult to meet in perfectly active and recent cultures individuals which are four and more times as big as the typical cells of the species; they look like single giant cocci. Then we find such giant cocci in which a division into two or four big cocci is more or less indicated and, lastly, giants in which the division into two or four is complete. We have, then, in these giants the growth of a coccus to great size without division—that is to say, while in the majority of instances, and, as a rule, a coccus having increased a little in size proceeds at once to divide into two cocci of the ordinary or typical size, in these giants division has been greatly delayed while enlargement continues whereby the single coccus reaches the size of a torula or blastomyces.

Another fact which seems to point to cocci being probably phylogenetically related to blastomyces or torula is this: In cultures of some strains of streptococcus one meets in older cultures on solid media with appearances which markedly resemble not fission forms, such as are generally typical for cocci but forms which suggest gemmation—viz., a typical coccus of the normal size from which projects a very small coccus as if this had sprouted out of the former—that is to say, forms which as sprouting buds are common in the gemmation of torulæ.

Gordon's "bacillary" forms amongst streptococcal individuals clearly indicate forms akin to saccharomyces.[9] In a similar position stand those bacterial species in which all shapes occur intermediate between coccus forms and longer or shorter threads and a group of species called by some observers cocco-bacilli.[10]

The same deviation from typical division, as mentioned above, is observed also on some species of bacilli. In a perfectly active and quite recent culture on gelatin of leptothrix epidermidis of some species of proteus vulgaris, bacilli are found which grow to great length—in fact, become long threads in which no sign of division is apparent. The threads are perfectly uniform in fresh as well as in stained specimens. The same is well known to occur in bacillus œdematis maligni and other species. But besides these uniform threads there are others in which at one or another point of their length here and there a more or less distinct indication of differentiation into shorter or longer cylindrical elements occurs, and finally, as growth proceeds the uniform threads quite disappear and only typical short cylindrical bacilli are found, some more cylindrical and longer than others and showing more or less distinct fission into two shorter bacilli.

When one examines a stained film specimen of an agar culture of the bacillus anthracis, or bacillus subtilis, or bacillus mesentericus—that is, bacillary species noted for the formation of threads or leptothrix forms—the threads are seen to be in reality linear series of cylindrical bacilli placed endwise; some of the component elements are longer and others are shorter, the longer ones showing indications of fission into two short elements. But while this is unquestionably the appearance of the typical process of fission, it is not difficult to ascertain that under different conditions—e.g., in nutritive gelatin—even at the earliest and most active phases of growth, bacilli grow out and elongate into threads in many of which no indication of division into cylindrical elements can be made out, although at a later phase all threads may have assumed the typical appearances of chains of cylindrical bacilli. The same phenomenon of retarded fission occurs also on some of the colonies of the bacillus pestis growing on nutritive gelatin. It ought to be stated that such cultures in subsequent stages prove perfectly active and normally virulent. Bacilli typhosus and coli-like bacilli growing on gelatin, particularly the former, show in the earliest, as also in the later, stages uniform threads. In vibrios such retarded division or absence of division leads to the formation of unsegmented spirilla. Such forms with greatly retarded division appear to me to be comparable with the non-septate or uniform threads which are of common occurrence amongst oidium, where also many at first uniform threads divide in later phases into cylindrical, oval, or spheroidal elements.

From all these facts I think that we are justified in drawing the conclusion that the same phylogenetic relation exists between cocci and bacilli as between the true torulæ and saccharomyces or oidium, and further that the bacilli themselves are the counterpart of those blastomycetes which belong to the group of saccharomyces or oidium. This would lead us to the further conclusion that just as saccharomyces or oidium is phylogenetically considered an offshoot of the primary and true torula, so also the bacteria, both cocci and bacilli, as shown by their conditional relapse into atavistic forms, are phylogenetic offshoots of blastomyces. If this view be the correct interpretation of the phenomena enumerated we would have to start with the true torula as being situated at the parent trunk; bacteria, commencing with cocci, as representing one kind of branch; oidium and streptothricheæ another, and sporogenous hyphomycetes as the further phylogenetic diversion of the latter. Amongst the bacteria the typical cocci, like staphylococci, would be the primary forms, next would come streptococci and cocco-bacilli, and last the true bacilli. And amongst the bacilli those species which are capable of forming true spores would represent a phylogenetic advance on other bacterial species, just as hyphomycetes, which are capable of forming spores like penicillium, mucor, and aspergillus, are

[8] The same branched forms have been observed also in tubercle of cold-blooded animals—fishes and reptiles, F. J. Friedmann, Centralblatt für Bakteriologie und Parasitenkunde, vol. xxxiv., Nos. 7 and 8.

[9] Report of the Medical Officer of the Local Government Board, 1900–01, 1901–02.

[10] This group is a large one comprising numerous species; amongst them may be mentioned a number of species of coli-like bacilli—bacillus influenzæ, bacillus pseudotuberculosis, bacillus pneumosepticus, bacillus of fowl cholera, and others.

phylogenetically a higher branch than saccharomyces or oidium and streptothricheæ.

2. CHEMICAL.

I mentioned at the commencement that bacteria in morphological respects are comparable to plants. But already many years ago it had been pointed out by the late Sir Edward Frankland that bacteria, unlike plants and more like animal cells, break down higher and complex organic bodies into simpler compounds and there can be no question that this universally holds good for bacteria—viz., that either by oxidation or reduction they are engaged during their life in dissociating more complex into less complex matter. But it has nevertheless to be remembered that some, at any rate, are capable of building up higher compounds (their own protoplasm) from simpler combinations. Thus Cohn has established that some species are capable of growing, multiplying, and thriving in fluids which contain no higher nitrogenous substance than ammonium tartrate, although under this condition, being capable of growing and multiplying—i.e., building up their albumin-containing protoplasm—they must of necessity be credited with forming the more complex nitrogenous body proteid from the simpler nitrogenous body ammonium tartrate. Thus, for instance, bacillus subtilis grows well in Cohn's fluid, so do also some species of micrococci of water and air, although all these can at the same time when growing in proteid materials decompose them. But there are many species of bacteria, including all parasitic or pathogenic species, which cannot grow in Cohn's fluid and which require for their nutrition and growth nitrogenous bodies more complex than tartrate of ammonia; and further there are species which for their growth and multiplication require nothing short of the most complex albuminous body —viz., hæmoglobin. To the latter class belong some pathogenic bacteria like the bacillus of influenza, of whooping-cough, and the micrococcus gonorrhœæ, bacteria spoken of as hæmophilous. In these we have then species which possess in a pre-eminent degree the power, indeed the necessity, to dissociate higher, even the highest, proteid bodies. From these facts it would not be justifiable to assign to bacteria in a general way that particular chemical activity which distinguishes the vegetable from the animal cell—viz., the power possessed by vegetable cells to build up from the simplest chemical bodies like nitrates complex nitrogenous organic bodies like proteids. Further, in these respects bacteria do not differ from blastomycetes and hyphomycetes which are possessed of the same power to break down in a marked degree higher organic nitrogenous bodies into simpler compounds.

It is outside the scope of the subject of this lecture to discuss the manifold chemical processes with which many species of bacteria are connected, processes which offer a wide field of investigation and which have received a great deal of attention, having an important practical bearing on agriculture, technical chemistry, various industries, and last, but not least, on physiology and pathology. I must confine myself here to a few points bearing directly on the evolution and differentiation of bacteria:

The first point is this. Certain species of bacteria—apart from the question of capability or non-capability to set up specific disease in the human and animal system—possess in their cell bodies an intracellular phlogogenic poison which, judged by the result of peritoneal injection into the guinea-pig, causes acute inflammation (peritonitis) with fatal result; this result being uniform for all active species must be due to a poison common to them all;[11] it is a poison lodged in the cell substance itself and in most instances readily obtained by simple emulsion. A mass of the growth from the surface of a solid nutritive medium distributed in some neutral fluid like salt solution, when injected in a given quantity, which differs for the different species of bacteria, into the peritoneal cavity causes acute fatal peritonitis. This result is produced equally with the living as with the previously killed emulsion. In the latter case a larger dose is required than of the living emulsion, for the obvious reason that when the living emulsion is injected the bacilli multiply within the peritoneal cavity and thus rapidly increase the amount of the bacterial substance. In this action there is nothing of the nature of a specific disease, and, as a matter of fact, it is observed in some species of bacteria which have no action of an infecting nature on the animal body, as, for instance, bacillus prodigiosus, which by these experiments shows itself to stand high in the possession of the intracellular phlogogenic poison. Further, taking, for instance, two microbic species like bacillus typhosus and the common bacillus coli, the former being the cause of a specific disease, the latter not, it will be found that both possess the same kind of intracellular phlogogenic poison causing the same kind of acute fatal peritonitis. Or take another example—the vibrio of cholera and the vibrio of Finkler. The former is connected with infectious disease, the latter is not. The possession of intracellular phlogogenic poison is common to both.

Moreover, it is interesting to find that there are some species which, though capable on inoculation in the living state by the proper channels of causing highly virulent infectious disease, are not possessed of the above intracellular phlogogenic poison. To this category belong the bacillus anthracis, bacillus diphtheriæ, and bacillus of swine erysipelas. Each of these species injected in the living state subcutaneously in small doses into guinea-pigs causes the specific disease—viz., virulent anthrax, diphtheria, or swine erysipelas respectively—but even large doses of the dead bodies of these bacteria can be injected into the peritoneal cavity without causing any result. In the case of the bacillus anthracis care must, of course, be taken to exclude spores and to use a recent growth only in which no spores have as yet made their appearance.

Specific toxins.—Specific pathogenic bacteria are capable of producing in certain culture media specific toxins which, when injected alone into the animal body—i.e., separated from the bacilli which produced them—are capable of causing the specific disease in all, or most, of its symptoms and with fatal issue; it is this discovery of specific toxins and their separation and study which constitutes one of the most important advances in chemical bacteriology and it was applied first by Behring and Kitasato in the case of diphtheria and tetanus to the discovery and the production of antitoxin which plays an important and ever-increasing rôle in therapeutics.

It has been found in recent years that while certain pathogenic bacteria readily elaborate their specific toxins in certain culture media others do not do so. Thus, while the presence of the specific toxin of anthrax when grown in certain media (blood serum, fibrin), of tetanus in formate and glucose broth, of diphtheria in ordinary broth, is demonstrable in the medium, it is not present in the broth cultures of the bacillus typhosus or vibrio choleræ. This holds good in a conspicuous degree with the tubercle bacilli which, as Koch has shown by his different forms of tuberculinum, have stored in their substance several kinds of specific toxins. It is suggested that in the first class of cases the toxin is ectotoxin—i.e., outside the bacterial cell, e.g., tetanus, diphtheria—whereas in the second the specific toxin is inside—i.e., stored up within the bacterial cell, endotoxin, e.g., the bacillus typhosus,[12] vibrio choleræ, and bacillus tuberculosis. If this view be the correct one we should have three different groups of bacteria as regards their behaviour in artificial culture media—viz., (1) such as neither within nor without the bacterial cell produce any specific toxin, that is to say, toxin for the animal body, such are the non-pathogenic bacteria; (2) bacteria which possess the power to produce (secrete?) a specific toxin in the culture media (ectotoxin) or to include (store up) in their substance the specific toxin (endotoxin); such are the true specifically pathogenic bacteria—i.e., those connected with specific diseases; and (3) bacteria, some connected with infectious disease, others not, which possess an intracellular poison of a phlogogenic character—that is, a poison which is not specific but which is capable of causing, on intraperitoneal injection, in all instances the same acute peritonitis. As mentioned above, other bacterial species of the non-pathogenic, as also of the pathogenic kind, do not seem to be possessed of this general intracellular poison.

Putrid decomposition.—There is one group of bacteria which from a certain point of view requires separate

[11] The omission to distinguish and to separate this general phlogogenic poison lodged in the substance of this class of bacteria from the specific toxin also present in the substance of some of the specifically infective bacteria—i.e., connected with infectious disease—like vibrio choleræ and bacillus typhosus detracts considerably from the earlier researches of R. Pfeiffer on the cholera toxin and somewhat from the recent researches of Macfadyen and Rowland on the typhoid toxin.

[12] As to the additional presence of a general phlogogenic poison, phlogogenic to the guinea-pig's peritoneum, see the remarks made ante.

treatment; these are the species which cause putrefaction in the narrower sense—viz., decomposition of albumin with evolution of ammonia and sulphuretted hydrogen and with the simultaneous production of those poisonous alkaloidal bodies studied by Selmi and Brieger and known as ptomaines. To this group belong aerobic as well as anaerobic species—e.g., proteus vulgaris (aerobic), some not sufficiently defined species of cocci (?) (aerobic and anaerobic), the anaerobic bacillus cadaveris sporogenes (Klein) (bacillus putrificus coli Bienstock, bacillus radiatus Lüderitz). They are capable of producing poisonous alkaloids, which, injected into animals—rodent as also carnivorous—in sufficient doses directly into the vascular system or subcutaneously cause acute severe gastro-enteritis, rise of temperature, vomiting, diarrhœa with hæmorrhage into the duodenum and rectum, suppression of urine, collapse, and death. These are the poisonous actions which were known already to Bergmann, Panum, and Billroth as "putrid intoxication" and which were produced by them with infusions (unheated or heated) obtained from putrid meat or other putrid animal materials. These species cannot on this account be confounded with the pathogenic bacteria mentioned above. Some of these "putrefactive bacteria" do not multiply in the normal tissues and are harmless when injected by themselves, although others, like some varieties of proteus vulgaris, are capable of growing and multiplying in the subcutaneous tissue of rodents—and probably also in wounds of human beings—and of causing the production of ptomaines *in situ* and by absorption of these a fatal intoxication (fatal sapræmia).

3. PHYSIOLOGICAL.

It is agreed on all sides that certain species of bacteria do not in any circumstances cause any pathological effect when introduced into the animal body; when planted into the living tissues they rapidly degenerate and disappear. Bacteria of this kind thrive and grow well in dead tissues and under the most varied conditions in outside nature are readily capable of keeping up their existence. Such species are distinctly pure saprophytes. But it must be understood that they are not necessarily connected, as their name would indicate, with any definite process of decomposition such as putrefaction, as above explained. And it is in this sense—viz., being capable of growing and multiplying in outside (dead) nature, in natural or artificial media—that the terms "saprophyte" and "saprophytic" are generally understood, although their exact chemical and physiological rôle is not sufficiently known. The group of pure saprophytes—such, namely, which cannot grow and multiply in the living body—comprises a very large number of species found in water, soil, air, and in dead organic matter of the most varied kind, and they include various species of cocci, streptococci, bacilli (motile and non-motile), vibrios, and spirilla.

Then there are species of bacteria which possess this essential character, that they are eminently capable of thriving and growing in the living body and setting up by their substance or by their chemical products (viz., by their specific toxins), each after its kind, a particular specific infectious disease. This is the case with the bacillus anthracis, bacillus of symptomatic charbon, tubercle, hæmorrhagic septicæmias of various kinds, tetanus, diphtheria, vibrio choleræ, bacillus typhosus, bacillus pestis, and a host of bacterial species causing other infectious diseases. Such bacterial species are true parasites, inasmuch as they are capable of thriving in and on the living tissues, each in its particular kind and with its own particular effect. Many of the parasitic bacteria are, however, also capable of thriving in outside nature in dead organic matter, although it is noticed that some do so with very little difficulty (anthrax, diphtheria, cholera, bacillus pestis) whereas others are more restricted both as regards the nature of the media in which they are capable of growing (gonococcus, bacillus influenzæ), as also the temperature at which they can grow (pneumococcus, bacillus tuberculosis). With Naegeli we may distinguish the parasites which can and generally do grow also in outside nature as ectogenic, from those parasites which are capable only of growing in the animal body and in order to maintain their parasitism have to be always transferred directly from animal to animal, and which may be designated as endogenic. While we know of a large number of species of ectogenic parasitic bacteria, bacteriology has so far, with the exception perhaps of the bacillus lepræ, not demonstrated bacterial species which can be considered as purely endogenic—i.e., purely parasitic in the above restricted sense. There are several infectious diseases, clinically and pathologically well defined, in which nothing is known of an ectogenic existence of the causal parasite—such, for instance, as variola, vaccinia, and syphilis, horse-sickness, cattle plague, and some others; in these diseases the causal parasite—so far as at present known, is a pure parasite—that is, it does not appear capable of growing and multiplying outside the animal body—but of what nature, whether bacterial or otherwise, is not known. Leaving out the bacillus lepræ as doubtful,[13] we are therefore not in a position to say whether there exist any *bacterial* species of the nature of pure parasites. As regards some of these undetermined microbes we have to admit that our present microscope is not capable of revealing them to the eye (being so infinitesimal as to be capable of passing through a Pasteur filter—e.g., the virus of foot and mouth disease, of horse-sickness, and others); and we have further to admit that there is no evidence at present forthcoming which would show that they are capable of leading an existence apart from the animal body.

So far, therefore, as our present actual knowledge goes all the known parasitic *bacterial* species (with the exception of the leprosy bacillus) can, under one condition or another, lead an existence separate from the animal body, i.e., are all ectogenic—in other words, can thrive also saprophytically. Whether under these conditions of saprophytic existence they retain or lose their parasitic (i.e., disease-producing) power after a smaller or greater number of transferences as many do, and as some do in a very short time (bacillus influenzæ, pneumococcus, and others), does not alter their fundamental nature.

Beyond the fact just stated that certain species of parasitic bacteria lose their virulence and ultimately altogether their pathogenicity when leading for prolonged periods the life of saprophytes there is in most instances nothing definitely known as to this being constantly associated with alteration of their morphological and cultural characters. For some species, at any rate, such a change is disproved. For instance, it is known that, like other parasites, the bacillus typhosus or the bacillus pestis, when leading for a considerable number of generations a saprophytic life, gradually lose their virulence and even their pathogenic action altogether, but nevertheless in other respects, morphological and cultural, retain their primary characters. Cultures of the bacillus typhosus obtained directly from the mesenteric gland or the spleen of a case of typhoid fever when injected into the peritoneal cavity of a guinea-pig possess a very high degree of virulence, of some strains a fraction of an ordinary platinum loop of the growth from the agar surface being thus capable of causing death of the animal within 24 or 36 hours. But by continued subcultures this virulence gradually decreases and after many transferences extending over many months may so decrease that a considerable amount has to be used in order to cause pathogenic action. The same applies to the vibrio of cholera and to the bacillus pestis. But while both the bacillus typhosus and the bacillus pestis remain in morphological staining and cultural respects practically unaltered it is not so with the vibrio of cholera and some other species. With the latter, that is, with the vibrio choleræ, as its saprophytic existence in artificial culture becomes prolonged and its virulence decreased or is entirely lost, a notable cultural change takes place—viz., it loses the power of liquefying gelatin altogether or to a very large extent. The rapid (from two to three days at 20° C.) liquefaction of the gelatin, i.e., the peptonising action of the cholera vibrio directly derived from the bowel discharges of an acute case of Asiatic cholera, is a conspicuous cultural character of this microbe. But in all other respects, morphology and staining, as also in the power to form nitroso-indol (cholera red), it remains unchanged, no matter how prolonged is its saprophytic existence or to what extent it has lost its pathogenic or parasitic character.

But while during this decrease in virulence the parasitic bacteria become more or less like true saprophytes it does not follow that a true saprophyte may become changed into a parasite. There is at present no proof of such a change—nay, the reverse has been demonstrated. Hueppe and Wood's assertions of some anthrax-like saprophyte being capable of specifically protecting an animal against true anthrax and the statements by Buchner and Sattler who thought to have proved such a change—the former that the bacillus subtilis

[13] Neisser maintains definitely that he has succeeded in obtaining cultures of the leprosy bacillus.

and bacillus anthracis are interchangeable, the latter as to the jequirity bacillus—have been shown to be erroneous. Theoretically there is no intrinsic improbability for this but as a matter of proof there is nothing definite known. All that has been proved is that a parasite which owing to continued life in artificial media has become harmless like a pure saprophyte can in some instances—as, for instance, by repeated passages through the animal body—resume the life of a parasite, though there are instances when this seems difficult or altogether impossible, the microbe having permanently lost its capacity to live in the animal body (some types of bacillus of plague, the pneumococcus, and streptococcus of erysipelas), but it has yet to be proved that a true saprophyte can change into the parasite of a specific disease.

It is an important inquiry under what conditions parasitic or specifically pathogenic bacteria, which have gradually assumed the character of true saprophytes, i.e., have lost the power to live in the animal body, regain their infective character, like the pneumococcus, the bacillus diphtheriæ, spores of anthrax, and streptococcus of erysipelas. It is obvious that this problem possesses an important practical aspect, since, if proved, it might help to explain the occasionally, though fortunately rarely, observed recrudescence of certain epidemics of infectious disease in a given locality from which it had altogether gradually disappeared and into which no new importation had taken place.

The general conclusion we are at present forced to arrive at is that true saprophytes do not under known conditions become endowed with the character of parasites, although many parasites—some sooner, some later—may lose this power and become saprophytes only; further, conditions might arise—as, for instance, their successful and continued passage through the animal body—which enables them to become restored to the power of leading a parasitic life. This phenomenon of increase of virulence—i.e., enhanced parasitism—is well established in the case of many species: the bacillus anthracis, bacillus typhosus, bacillus pestis, vibrio choleræ, pneumococcus, bacillus tuberculosis, and others. Thus the pneumococcus passed from rabbit to rabbit or from mouse to mouse decidedly increases in virulence; the vibrio of cholera and the bacillus pestis after several passages, the former by the peritoneum of guinea-pigs and the latter passed from rat to rat (subcutaneously or cutaneously inoculated), become enhanced in virulence. The bacillus anthracis passed from the infected mouse into a guinea-pig, then from this into a sheep, and, finally, into cattle, undergoes a marked increase in virulence.

These facts might furnish us with the explanation of a phenomenon known to epidemiologists—that an epidemic starts with a few mild cases which sometimes rapidly, sometimes slowly, give rise to widespread and virulent outbreaks. As illustration, I may quote school-borne diphtheria; this occasionally starts as mild so-called "simple sore-throat," which, however, is now admitted to be due to the true bacillus diphtheriæ, but it gradually becomes "nursed up," as it were, into typical and virulent membranous diphtheria; or epidemics of Asiatic cholera have been known to start with a few cases of "diarrhœa" which give rise to outbreaks of virulent typical cholera. And in respect of plague the same has been observed—viz., cases of atypical bubonic plague, not easily recognised by the clinician because of their mild type, are the starting points for outbreaks of virulent plague. It is quite feasible to assume that in all such instances the first mild cases are those in which the microbe at starting is of an attenuated type which can thrive only in the most susceptible individuals, causing in them a mild form of the disease, but in these it gradually becomes "nursed up," as it were, and is thus enabled to regain its full parasitism, and when arrived at this stage is readily capable of infecting even the less susceptible with the virulent form of the disease. A good illustration of this phenomenon is afforded by the pneumococcus; cases are known in which the patient through one or another predisposing cause, generally a chill, becomes subject to pneumococcal infection—i.e., acute croupous pneumonia—but soon the infectivity of such a case for others around him may, and sometimes does, assume a very striking character; person after person coming in direct contact with the infected individual is liable to, and sometimes does, become smitten with the disease. In other instances such high infectivity does not occur and the case remains an isolated one. Now, it must be remembered that the pneumococcus is by no means a microbe of limited diffusion; observations show that between 15 and 40—and, according to Netter, even as many as 60—per cent. of healthy persons harbour the pneumococcus in the bronchial system, pharynx, or mouth—i.e., practically on outer surfaces on which they, like other pure saprophytes, are capable of leading and maintaining their existence, but owing to one condition or another—most probably insusceptibility—the pneumococcus does not multiply sufficiently and does not set up the disease in the individual. Let, however, such a person's susceptibility become suddenly increased as, for instance, by a chill, and the pneumococcus in this person's bronchial system rapidly multiplies and croupous pneumonia is the result. Moreover, the pneumococcus of this same individual may have now acquired such an enhanced parasitic character (increased virulence) that it can readily cause the disease in otherwise healthy persons in whom that additional impetus—chill—is not required.

Besides true saprophytes and the true parasites there exists a group of bacterial species which require special consideration. While the saprophytes we have been dealing with hitherto are endowed with the power of causing specific infectious disease, growing and multiplying within the infected body and by their specific toxins causing the particular infectious disorder, there are a number of species of bacteria which under ordinary conditions are not endowed with such a power and generally lead a true saprophytic life. Take the common bacillus coli of Escherich, which is found in enormous numbers in the contents of the large intestine of the healthy, in sewage, in filth and all matters directly or indirectly polluted with excremental matters of man and the domestic animals. This microbe is a harmless saprophyte, harmless in so far as it does not in the natural course of things cause any diseased condition. But if owing to one or another altered condition—chiefly affecting the intestinal and abdominal organs, or even more distant organs like the lungs—it has passed into the absorbents and the blood stream it may be carried to different and distant organs, causing therein inflammation and abscess or even necrosis. Or it may get access to the bladder and cause cystitis. Abscesses localised in various parts of the body and due to the typical bacillus coli have been repeatedly described; similarly cases of cystitis due to the bacillus coli are well known. The same applies also to the bacillus proteus vulgaris which leads a common saprophytic existence in the contents of the large intestine, as also to some streptococci and staphylococci. The contents of the large intestine are practically dead matter and these microbes present in very large numbers do not cause any diseased state while the conditions remain normal, but under abnormal conditions of one sort or another in one or the other organ of the body may become endowed with the power of invading those organs and of causing localised pathological changes, which, speaking generally, are of the nature of inflammatory processes, sometimes with severe results of necrosis.

One of the first experiments in this respect was performed by Wyssokowitch [14] who showed that while certain species of staphylococcus injected into the circulating blood of an animal (rabbit) are perfectly harmless, they become endowed with distinct pathogenicity if introduced into the vascular system of the same animal species, in which in one or the other organ lesions have been previously produced, for then the staphylococcus is capable of settling in those organs, increasing and causing extensive inflammation. It is common knowledge that there are cases in which by mechanical injuries of the skin and deeper parts, notwithstanding that no actual breakage of the epidermis or superficial corium had taken place, severe inflammatory and suppurative processes may become established in the deeper parts due to the growth and activity of staphylococci (staphylococcus aureus and albus) which—as microscopic examination shows—have immigrated from the superficial dead layers of the epidermis, in which these microbes are generally present as harmless saprophytes. Such microbes, then, behave under normal conditions like true saprophytes, but under abnormal conditions are capable of assuming the character of pathogenic bacteria, inasmuch as they can grow and multiply in the living though altered tissues, therein causing disease processes. This kind of parasitism differs in an essential respect from that of the true or specific parasites—viz., in this, that, unlike the latter, they are not known to produce specific toxins and do not cause what are commonly considered specific infectious disease,

[14] Zeitschrift für Hygiene, Band I.

like the bacillus anthracis, bacillus tuberculosis, bacillus mallei, bacillus tetani, bacillus diphtheriæ, and a host of other true parasites.

From what has been said above of the pneumococcus it is clear that this microbe closely approaches the intermediary group. Such a view is also borne out by the fact that according to the locality of the body in which it gains a footing it causes a different form of pathogenic process; in the tympanum it is capable of causing purulent inflammation (otitis media), in the peritoneum also purulent inflammation, in the bronchial system inflammation with fibrinous exudation—croupous pneumonia, in the cavities of the brain and cord—cerebro-spinal meningitis. Moreover, in this way, as has been pointed out above, it may become so enhanced in its virulence and its power of parasitism that for successive generations its transference from an infected to a healthy person may exert, as has been already mentioned, the same pathogenic action. This intermediary group may therefore from a theoretical and practical point of view be considered as an important branch of the bacterial tree, important because the parasitism of the species—i.e., its pathogenicity—is conditional. While ordinarily they behave like true saprophytes and are not endowed with the power of multiplying in the living tissues and of causing pathogenic action, under abnormal conditions they may assume the life of parasites, and for this reason it may be appropriate to designate this group as "conditional parasites."

Also from another point of view this group is interesting, for it indicates that species exist which might form a link between true saprophytes and true parasites or specifically pathogenic bacteria. In fact, some bacteriologists assume that with some species this is actually the case—e.g., some assume that between the harmless saprophytic pseudo-diphtheria or Hoffmann's bacilli and the true diphtheria bacilli there exist all gradations (Roux and others). Hueppe and Wood record observations as to protection against true anthrax being conferred on mice by a species which in morphological and cultural respects, including spore formation, appears closely related to the bacillus anthracis; the microbe itself, although harmless, is credited by them with being capable of protecting mice against virulent anthrax. Similarly some observers claim a physiological relation to exist between some bacilli coli and the bacillus typhosus, while others have no difficulty in recognising a relationship between certain pseudo-varieties and the true parasitic species of other microbes. I have already indicated that the experimental proof for these assertions is as yet wanting.

As another and more satisfactory piece of evidence belonging to this discussion we may adduce the case of the streptococcus pyogenes. As has been known for some time this microbe is causally connected with some forms of acute as also chronic phlegmons and of abscesses. Of recent years Fraenkel and others, amongst them Koch, have pointed out that what was formerly considered as the specific streptococcus of erysipelas (of Fehleisen), capable of producing the clinically and pathologically well-defined acute febrile exanthema erysipelas,[15] is no other than the streptococcus pyogenes, that is to say, one and the same species which under one condition is the cause of simple phlegmon or simple abscess is capable under another condition of causing a different and specific disease, i.e., erysipelas. Both from a clinical and pathological point of view an abscess or a simple phlegmon can hardly be considered the same disease as the well-marked febrile exanthema which clinicians call "genuine erysipelas," and this is precisely what has been experimentally shown, for the streptococcus pyogenes, taken from an abscess, has produced in the rabbit's ear typical erysipelas, as typical as when the inoculation is made with the streptococcus taken from genuine erysipelas of man.

We may, from these facts and observations, I think, conclude (1) that the demarcation between true saprophytes and true parasites is, owing to the existence of the group of intermediary or conditional parasites, not defined; (2) moreover, that there is evidence to show that an ordinary saprophyte under altered conditions can produce pathogenic effect, thriving in the tissues of an animal; and (3) that a microbe under one condition, an ordinary saprophyte, can raise itself not only to parasitic life, causing pathogenic action, but further to a parasitic action which is as specific as that of the bacillus anthracis or bacillus influenzæ, as, for instance, is the case with the streptococcus pyogenes, the pneumococcus, and possibly certain species of diphtheroid bacilli. If this be the correct interpretation of the above observations we could not with any justification oppose the view which holds that at a very early history in the evolution of bacteria the first branches were of the nature of "pure saprophytes," that gradually another branch became evolved out of the former, leading to the evolution of what we designated as "conditional parasites," and that to these latter the final and highest branch, the "specific parasites," owe their origin. We may further in this hypothesis find the explanation why many of the specific parasites so readily revert to the stage of conditional parasitism—loss of virulence and loss of specific pathogenicity[16]—ultimately altogether losing the power of maintaining a parasitic life and of causing disease; and finally, that conditional parasites may return to the state of pure saprophytes, as is the case with some varieties of staphylococcus aureus and albus, bacillus coli, and streptococci.

There appears nothing improbable in the view that if the bacteria causing specific infectious disease—i.e., the distinctly parasitic bacteria—were prevented from transmitting their species through, and maintaining their existence in, *the animal body*—that is to say, if they were reduced to a saprophytic mode of existence only—they would ultimately lose their power of parasitism altogether and in consequence their power for further mischief, and specific diseases caused by them at present would spontaneously disappear in the future. We see an indication, at any rate, for this consummation in what actually occurs in those specific diseases which are imported into a country which is not endemic for the particular disease—e.g., plague and cholera. As soon as, owing to energetic measures being taken, the microbe is prevented from passing into new bodies the disease gradually dies out and does not ordinarily reappear. We cannot suppose that the hosts of the specifically infective microbes passing from the infected persons into outside nature die off at once; there is no reason to suppose this, seeing how readily they live and multiply in a saprophytic state in outside nature; it is more probable that they continue to live in this state but gradually lose their parasitic character and ultimately the power for further mischief altogether.

Symbiosis.—From a number of direct experiments made during the last ten or 12 years it appears that a definite interaction between certain bacteria can be demonstrated. I am not referring to the widely diffused popular belief according to which the so-called "benign" bacteria are capable of giving battle to, and of destroying, the pathogenic bacteria. This statement, which in this crude form is constantly reproduced in the lay press, is as unwarranted as it is barren of all direct evidence. It is amusing to hear it stated by a distinguished physicist that the ordinary saprophytic water bacteria are capable of acting against pathogenic bacteria which occasionally gain access to water in the manner of "police" as against "burglars." While such a statement may be useful for the vendors it certainly ought not to mislead the consumers of the water. The fact that pathogenic bacteria distributed in water gradually diminish and after many days and weeks (in proportion to their initial numbers) ultimately disappear is due, not to a destructive action on them by the saprophytic water bacteria themselves but to entirely other causes, chief amongst them inanition, the pathogenic bacteria requiring for their maintenance highly specialised organic nutritive materials absent in the water or present only in insufficient amount. That this is the real explanation can be easily proved by planting certain pathogenic bacteria—e.g., the typhoid bacilli—in water in parallel series, in one series using a given water from which the saprophytes or water bacteria have been previously removed, in the other series using water in which the saprophytic bacteria have not been interfered with. The gradual diminution and ultimate disappearance (or the persistence for longer or shorter periods) of the typhoid bacilli in both waters take place in practically the same manner.[17]

While the saprophytic water bacteria subsist in the water as in their natural soil and can thrive and multiply in it, pathogenic bacteria for obvious reasons cannot do so. Reverse the conditions, plant water bacteria and the typhoid

[15] The inoculation into the rabbit's ear with the streptococcus erysipelatos produces typical erysipelas and therefore the rabbit lends itself in a very appropriate manner for these experiments.

[16] Producing only a local lesion, generally of the nature of suppuration, similiar to that produced by the "conditional parasites."

[17] See Report of the Medical Officer to the Local Government Board, 1894-95.

bacilli into a medium in which the latter find the required nutriment and the result will be the exact opposite from the above. Wherever saprophytic bacteria endowed with the power of rapid multiplication find the conditions suitable for their growth and multiplication they naturally crowd out, as it were, the more specialised and more slowly growing pathogenic bacteria, though the medium offers to the latter otherwise suitable conditions. Even under these conditions it is not a question of active destruction of the one by the other, but simply a "survival of the fittest in the struggle for existence." Every bacteriologist is, unfortunately, constantly met by difficulties of this "crowding out" from his cultures of a pathogenic microbe by some faster growing saprophytes that happen to be present originally in the morbid products he analyses or which happen to find access to the culture medium and many an erroneous discovery has had its origin in this cause.

To the same cause are to be ascribed the well-known adverse effects which putrefaction and decomposition exert on pathogenic bacteria. The spleen and the blood of an animal dead from malignant anthrax teem with the bacillus anthracis; when such materials undergo putrefaction the bacillus anthracis, sometimes sooner, sometimes later, degenerates and dies off, so that after a certain time those materials altogether lose their infective power, provided no spores have been formed. In this destruction of the bacillus anthracis it is not a question of destruction directly by the putrefactive bacteria themselves but is partly owing to the rapid growth of the putrefactive bacteria and appropriation of all nutritive substances and partly to the production by the fast-growing putrefactive bacteria of chemical substances directly affecting the anthrax bacilli in a similar way as the chemical poisons present in fæcal matters adversely affect anthrax bacilli, vibrio choleræ, and others (Kitasato). The same comparatively rapid disappearance of non-sporing pathogenic bacteria from the dead body, due to the rapid growth of putrefactive bacteria and their chemical products, has been well established experimentally (German Commission, Klein).

In all these instances it is a question of the successful competition of the rapidly growing saprophytes over the slower growing and weaker pathogenic bacteria. It is for this reason that pathogenic bacteria are capable of maintaining their existence so much longer in materials which contain few saprophytes, provided they contain the required nutriment.[18] Dr. Sidney Martin's comparative experiments of planting the bacillus typhosus in sterile soil as compared with non-sterile soil show the same result, although it has to be added that the disappearance of the bacillus typhosus from non-sterile soil does not occur so rapidly as was at first thought; the observations of Levy and Keyser,[19] as also the experiments of Horrocks and Frith, of Pfuhl,[20] of Wurtz and Bourges,[21] clearly show this.

In the experiments of Klein and Houston[22] the rapid or slow disappearance of certain pathogenic microbes (bacillus diphtheriæ, vibrio choleræ, bacillus typhosus) planted into food-stuffs is shown to depend on the larger or smaller number of saprophytic bacteria originally present in those food-stuffs.

When I referred above to a definite interaction between certain bacteria I was not referring to the indirect action which the products, generated in culture media by the growth of one species, are capable of exerting, in some instances adversely, in others favourably, on the simultaneous or subsequent growth and action of another species, either *in vitro* or *in corpore*—a line of research first initiated by Soyka and Bandler,[23] Garré,[24] Achille Monti, and others, but I intended to refer to a *direct* influence which one species is capable of effecting on another species simultaneously present—i.e., growing symbiotically[25] either in artificial culture or in the animal body. Charrin, von Emmerich, and others found that the bacillus pyocyaneus to a certain degree adversely affects bacillus anthracis. Emmerich, Klein, and others found the same inimical effect of streptococcus of erysipelas on the bacillus anthracis.

As regards artificial media Metchnikoff[26] noticed a distinctly inhibitory effect of one species on another in plate cultures. Lode described[27] similar experiments in which antagonism was noticed as regards a certain microbe against the micrococcus tetragenus, bacillus anthracis, and staphylococcus pyogenes aureus, whereas no antagonism of this microbe was noticed against the bacillus coli communis, bacillus Friedländer, and others. (Gottschlich gives a good review of the bibliography of this subject in Kolle and Wassermann's Textbook, Band i., p. 120, both as to antagonism and symbiosis.) The enhanced influence of streptococcus pyogenes on the virulence of the bacillus diphtheriæ, as also that of streptococci, proteus vulgaris, and other putrefactive microbes on the bacillus tuberculosis, may be interred from the increase in virulence of the two diseases respectively in the copious presence of the above species. This influence of symbiosis within the animal body of one microbe not necessarily other than saprophyte on a specific parasite, though in some instances shown to be *nil*, is in other instances distinct, in some it is antagonistic and in others enhancing. I will mention here a few such instances with which I have myself recently been engaged. In experiments on symbiosis[28] within the animal body of the bacillus enteritidis of Gaertner and other highly virulent bacillus coli and virulent anaerobes on the one hand and the bacillus typhosus and vibrio of cholera of attenuated types on the other a distinctly enhancing action by the former (bacillus Gaertner) is exerted on the latter (bacillus typhosus, vibrio choleræ), whereby these latter regain their original virulence which in control experiments they fail to manifest. Similarly, a distinctly enhancing action is produced in symbiosis within the animal body of the streptococcus pyogenes on the one hand and the attenuated bacillus diphtheriæ on the other. Here also the virulence of the latter becomes rapidly restored by symbiosis with the former. (These experiments will be fully described in the report of the medical officer to the Local Government Board for 1903-04.)

Such enhancing action of one species on another may be experimentally demonstrated, but it does not follow that such influence is effected in all instances; as a matter of fact, as has been already mentioned, the result of symbiosis may be the reverse of an enhancing of the virulence of one given pathogenic microbe by another species, while in still other instances the effect may be altogether *nil*; of the latter class I have mentioned several series of experiments in the reports of the medical officer to the Local Government Board for 1892 and 1893—e.g., swine erysipelas and swine plague, fowl cholera and fowl enteritis.

From the experimental evidence already gained it must be obvious that this branch of bacteriology—namely, the study of the effect of symbiosis—offers a fruitful and important field of research, important both in theory and practice. To mention one consideration only—the greater or lesser susceptibility to infection with a particular specific disease of one individual over another is justly considered a complex subject, for it must depend on the mode of contagion, on the virulence of the contagium itself, on the condition of the individual, on the presence or absence of protective substances in, that is in the vulnerability of, the individual and probably on other at present unknown factors.

Taking a specific instance—e.g., the now notorious typhoid oyster banquets at Winchester and at Southampton in November, 1902, investigated by Dr. H. T. Bulstrode. As in some other more isolated instances, also in those of Winchester and Southampton, a considerable percentage of the consumers of the oysters were taken ill on the next day with gastro-enteritis,[29] which obviously was not typhoid fever, nor could it have been due to the ingested typhoid bacilli; in epidemics of typhoid fever by infected water such acute illness—viz., transitory gastro-enteritis—is not recorded. The initial acute transitory gastro-enteritis must have been, therefore, due to some cause other than that of the bacillus typhosus, which latter, and in a percentage only of these cases, manifested itself in due course—i.e., after the usual incubation period of from 10 to 14 days. This other cause producing the acute transitory gastro-enteritis, more abundantly present in the oysters than the bacillus typhosus, is probably to be sought in the

[18] Ibid., 1897-98.
[19] Centralblatt für Bakteriologie und Parasitenkunde, Band xxx., No. 7.
[20] Zeitschrift für Hygiene und Infektion, 1892.
[21] Archiv Pathol. Experimentelle, Band xiii., 1901.
[22] Report of the Medical Officer of the Local Government Board, 1900-01.
[23] Fortschritte der Medicin, 1888, p. 769.
[24] Correspondenzblatt für Schweizer Aerzte, Band xvii., 1887.
[25] The terms "symbiosis" and "symbiotic" are used here to denote the simultaneous presence of two bacterial species in the same host, irrespective whether or no they are mutually beneficial.
[26] Annales de l'Institut Pasteur.
[27] Centralblatt für Bakteriologie, vol. xxxiii., No. 3.
[28] See note 25.
[29] Fifty-two persons at Winchester; 44 at Southampton, and of the former 10, and of the latter 11, developed typhoid fever subsequently.

simultaneous presence in those oysters of some pathogenic microbes belonging to the group of the bacillus enteritidis of Gaertner. As a matter of fact, in oysters which were taken at a subsequent date from the same pit from which the above typhoid oysters were derived I found in a percentage of them distinct evidence of the presence of bacteria belonging to the group of the bacillus enteritidis of Gaertner. The ingestion of this microbe producing the initial transitory gastro-enteritis may have had an important influence not only in raising the susceptibility *per se* of the affected person towards the typhoid bacillus, but it may have directly been instrumental in enhancing the virulence of this latter. In the animal experiments such an enhancing of the virulence of the typhoid bacillus by the bacillus of Gaertner was directly demonstrated. May not such symbiosis be at least one of the factors contributing to the consummation of infection? Experimentally it has been proved that the symbiosis of the bacillus pseudo-tuberculosis has an enhancing influence on the bacillus tuberculosis, and from a paper by Professor Hueppe, who collected the statistics from various observers, it appears that in persons considered to be free from either general or pulmonary tuberculosis there were nevertheless discovered on post-mortem examination, in nearly 40 per cent., tubercle bacilli in the bronchial glands or in one or the other organ, in slight lesions only discoverable by the post-mortem examination. Is it not conceivable that the absence in these individuals of the other enhancing microbe is the real cause of this immunity to general tuberculosis? Is it not conceivable that the terms "predisposition to consumption" and "greater vulnerability of the tissues to tuberculosis" may include symbiosis of another microbe which prepares the ground for, and enhances the activity of, the tubercle bacillus? These are questions which experimental pathology will be able to solve and which, in the interest of practical medicine and of hygiene, it is well worthy to undertake.

CLINICAL OBSERVATIONS ON THE ANÆSTHETIC EFFECTS OF METHYL OXIDE, ETHYL CHLORIDE, AND THE SO-CALLED "SOMNOFORM."

BY FREDERIC W. HEWITT, M.V.O., M.A., M.D. CANTAB.,

ANÆSTHETIST TO HIS MAJESTY THE KING; PHYSICIAN-ANÆSTHETIST TO ST. GEORGE'S HOSPITAL; CONSULTING ANÆSTHETIST AND EMERITUS LECTURER ON ANÆSTHETICS AT THE LONDON HOSPITAL.

(Concluded from p. 1413.)

4. MIXTURES OF NITROUS OXIDE AND ETHYL CHLORIDE, OF NITROUS OXIDE, ETHYL CHLORIDE, AND AIR, AND OF NITROUS OXIDE, ETHYL CHLORIDE, AND OXYGEN.

WHEN a mixture of nitrous oxide and ethyl chloride vapour is administered in such a way that after a few expirations have been allowed to escape the remainder is breathed backwards and forwards, a profound effect is rapidly produced. In the year 1903 I described and demonstrated before the British Dental Association at Brighton a method by which nitrous oxide could be used as a preliminary to ethyl chloride,[1] the result being in many respects remarkable. Many patients object to the odour of ethyl chloride, even though the vapour be admitted very gradually. Nitrous oxide is hence an excellent anæsthetic with which to commence the administration. Moreover, the anæthesia from nitrous oxide being comparatively short, the addition of a small quantity of ethyl chloride is distinctly advantageous, so far as the production of a longer anæsthesia is concerned. The plan I adopted is represented in Fig. 2. A two-gallon bag is partly or completely filled with nitrous oxide according to the type of patient; a graduated tube containing from three to five cubic centimetres of ethyl chloride is fitted to the vulcanite stop-cock at the bottom of the bag; one-half of the nitrous oxide is exhaled through valves, the other half is breathed backwards and forwards whilst the ethyl chloride is being tilted into the bag, and a breath of air is admitted if required. The interesting point about this method is that patients are by its use plunged in an extraordinarily short time into the deepest anæsthesia with which we are acquainted, the pupils becoming dilated and the muscular system relaxed with almost alarming rapidity. I need not repeat what I have already published concerning the details of this method of administration. It has been used somewhat extensively, particularly by Dr. A. Moritz, who was for some time attached to the Royal Dental Hospital and who has been kind enough to furnish me with the following summary of his experiences with the method. He employed it in over 3000 cases. He found that patients preferred the induction sensations to those of ethyl chloride alone; that coughing, cyanosis, excitement, and struggling never occurred during the induction stage; that marked vaso-dilatation was often produced; that deep anæsthesia came about with extraordinary rapidity; that the best results were obtained with fairly large doses

FIG. 2.

(five cubic centimetres) of ethyl chloride without much re-breathing; that during the recovery stage there was often a long analgesic period, free from movement, which could generally be utilised by the operator; that headache, vertigo, hysterical outbursts, and (in men) pugnacious demonstrations occasionally manifested themselves after the administration; that nausea or vomiting occurred afterwards in about 1 case in every 7; that in alcoholic and neurotic subjects a much better result was often obtained than with nitrous oxide; that the average available anæsthesia was about 60 seconds; that the method could always be depended upon for providing an adequate anæsthesia; and that in no case were there any dangerous symptoms. Personally I do not employ this method to any great extent; for the same reason that I do not employ ethyl chloride—viz., that the percentage of cases in which unpleasant after-effects take place is too high.

As mixtures of nitrous oxide and air containing sufficient air to obviate all asphyxial phenomena are, generally speaking, not quite rich enough in their anæsthetic factor to produce deep anæsthesia I thought that by the addition of a small quantity of ethyl chloride to such a mixture one might possibly intensify the anæsthetic effects to the desired degree. The results in Case 9 (Table III.) were not, however, very striking. Phonation occurred early in the administration, the anæsthesia was of a light form, and there were disagreeable after-effects. In other words, the percentage of ethyl

[1] See British Dental Journal, September, 1903, vol. xxiv., p. 615.

TABLE III.—GIVING PARTICULARS OF A CASE IN WHICH A MIXTURE OF ETHYL CHLORIDE VAPOUR, NITROUS OXIDE, AND AIR WAS USED.*

No. of case in note-book.	Sex.	Age.	Description and diet.	Method of administration.	Inhalation.	Available anæsthesia.	Phenomena: remarks.	Numerical value.
					Seconds	Seconds		
9	F.	25	Tall; very nervous; good heart sounds; tea and bread-and-butter 4½ hours before.	*Method.*—28,012 c.c. of this mixture breathed through valves, all expirations escaping.	105	39	Moderate movement and phonation; some nausea and headache after; induction pleasant.	2

* The calculated composition of the mixture was: ethyl chloride vapour, 3·9 per cent.; nitrous oxide, 57·7 per cent.; nitrogen, 30·7 per cent.; and oxygen, 7·7 per cent.

TABLE IV.—GIVING PARTICULARS OF A CASE IN WHICH A MIXTURE OF ETHYL CHLORIDE VAPOUR, NITROUS OXIDE, AND OXYGEN WAS USED.*

No. of case in note-book.	Sex.	Age.	Description and diet.	Method of administration.	Inhalation.	Available anæsthesia.	Phenomena: remarks.	Numerical value.
					Seconds	Seconds		
12	F.	19	Fair; average build; rather nervous and tremulous; cup of tea 5 hours before.	*Method.*—23,992 c.c. of mixture breathed through valves, all expirations escaping.	111	45	Moderate movement; loud phonation; giddiness after.	2

* The calculated composition of the mixture was: ethyl chloride vapour, 4·2 per cent.; nitrous oxide, 85·1 per cent.; and oxygen, 6·7 per cent.

chloride vapour (3·9) seemed insufficient to counterbalance the diluent effect of the 38·4 per cent. of air.

With the object of ascertaining whether a small quantity of ethyl chloride vapour would, if added to a mixture of nitrous oxide and oxygen, intensify the anæsthesia I administered the mixture described in Table IV. The results, however, were again unsatisfactory, phonation commencing early and continuing more or less throughout.

In the two preceding cases there was no re-breathing and it is not surprising, therefore, that the anæsthesia was of a light type.

5. THE SO-CALLED "SOMNOFORM."

As much discrepancy of opinion exists concerning the relative efficiency of ethyl chloride and somnoform for brief operations I administered the latter body by methods identical with those described when dealing with ethyl chloride. Table V. shows my results in the 14 somnoform cases. In Case 10 Method 1 of the ethyl chloride cases was used. Apnœic pauses like those observed with ethyl chloride occurred during the administration, there were distressing after-effects, and the numerical value of the case was 2. In Cases 19, 20, and 21 a method practically identical with Method 3 of the ethyl chloride cases was followed. The arbitrary numerical values were 3, 4, and 5 respectively. In the remainder of the somnoform cases (ten in number) a measured quantity of the substance was gradually diffused into 3000 cubic centimetres of air and the average numerical value of the ten cases was 2·8. As will be seen by reference to the 13 ethyl chloride cases in which this method (Method 5) was used the values were higher with this drug, the average working out at 3·5. The significance of this result will be subsequently referred to.

6. "MULTIPLE-ADMINISTRATION" CASES.

From an inspection of the foregoing tables it will be seen that several of the patients were anæsthetised on two or more occasions and that at these times different anæsthetics or different methods were employed. We have therefore now to consider a certain number of "multiple-administration" cases, a careful study of which will reveal many interesting points.

During the past year I have very frequently been asked my opinions with regard to the so-called "somnoform," and although I have had my own private convictions as to its possessing no advantages over ethyl chloride and have even gone so far as to regard it on purely scientific grounds as inferior to ethyl chloride I have never allowed myself to speak positively on this point. It is not quite so agreeable to inhale, and by reason of the ethyl bromide which it contains it is much more liable to decompose than ethyl chloride. At first I was inclined to expect that its most volatile constituent, methyl chloride, would escape rapidly when the dose of somnoform was placed in a graduated glass tube, but the ebullition of the methyl chloride is soon checked by the cold produced, so that although one never actually administers to the patient the vapours of a liquid having the precise composition of somnoform there is not that great change in composition which might be expected. However, this aspect of the subject has not concerned me. I have simply had before me the questions: Is somnoform clinically preferable to ethyl chloride? Is ethyl chloride clinically preferable to somnoform? Are their effects identical? We have already seen (*vide supra*, § 5) that with the same method but different patients a series of somnoform cases had distinctly lower numerical values than a series of ethyl chloride cases. Let us now see what our "multiple-administration" cases teach us.

In Case 11 (Table II.) ten cubic centimetres of ethyl chloride were added to 24,450 cubic centimetres of air; in Case 10 (Table V.) the same patient was anæsthetised by ten cubic centimetres of somnoform diffused into the same quantity of air; in both cases valves acted throughout and the administration lasted 105 seconds. The duration of the fast beforehand was the same. The available anæsthesia was longer with ethyl chloride (51 seconds) than with somnoform (33 seconds). The after-effects were such as to give each case a low arbitrary numerical value (2). The patient stated that she felt about the same after the one anæsthetic as after the other. Consciousness was lost rather earlier (21 seconds) with ethyl chloride than with somnoform (27 seconds), which is what one might expect. In both cases the breathing became very shallow—a characteristic feature of this method of administration. My notes state that the after-effects were apparently identical and were, as we now know, dependent upon the large dose of ethyl chloride inhaled.

In Case 26 (Table II.) five cubic centimetres of ethyl chloride were gradually diffused into 3000 cubic centimetres of air, the patient breathing backwards and forwards throughout; in Case 28 (Table V.) the same patient was anæsthetised in precisely the same way except that somnoform was used. In each case the administration lasted 72 seconds. The results, however, were very different, the

arbitrary numerical value of the ethyl chloride case being as high as 5, whilst that of the somnoform case is as low as 1. With ethyl chloride there were phonation and very slight movement during the administration; with somnoform there were loud screaming and kicking. In the ethyl chloride case there was no phonation during the operation, whereas in the somnoform case directly the operation began reflex phonation occurred. The available anæsthesia was about the same in both cases. As regards after-effects there were giddiness and nausea after the somnoform but not after the ethyl chloride. Fortunately the preparations as to diet were the same on both occasions. There is one additional point of interest which is again in favour of ethyl chloride. Immediately before the ethyl chloride administration the patient had had nitrous oxide with a very unsatisfactory result, so that she was in a less favourable condition on this occasion than when somnoform was employed at a later date. On a third occasion this patient was anæsthetised by methyl oxide (Case 16, Table I.) and an unsatisfactory result (A.N.V. = 1) was produced.

In Cases 29 (Table II.) and 35 (Table V.) a similar comparison was made. The patient, the method, and the duration of administration remained the same; the only difference was in the kind of anæsthetic. With ethyl chloride (Case 29) an ideal result was obtained (q.v.). With somnoform (Case 35) the anæsthesia was, if anything, shorter and there were movement and phonation towards the end of the operation period. It is interesting and significant that with the ethyl chloride the conjunctival reflex vanished in 66 seconds, whereas with somnoform the conjunctival reflex was not abolished at the end of the administration. The patient detected no difference between the two administrations.

In Cases 30 (Table II.) and 34 (Table V.) a similar comparison was made. The patient, the method, and the duration of administration remained the same; the only difference was in the kind of anæsthetic and in the length of fast before the administration. Consciousness and the conjunctival reflex were respectively lost a few seconds earlier in the somnoform than in the ethyl chloride case. Muscular relaxation occurred in both cases. In the somnoform case phonation commenced directly the operation began; in the ethyl chloride case it did not start till about 15 seconds later. The available anæsthesia was apparently a trifle longer in the somnoform case and the breathing was more laboured. There is, however, very little difference between the two cases. Possibly the shorter fast in the ethyl chloride case somewhat interfered with the full effects of the drug.

In Cases 39 (Table II.) and 43 (Table V.) a similar comparison was made. The patient, the method, and the duration of administration remained the same; the only difference was in the kind of anæsthetic. The duration of fast was about the same. The patient was a very nervous child and a bad result was obtained in each administration. Consciousness and the conjunctival reflex were respectively lost rather more rapidly under somnoform than under ethyl chloride. The important point, however, in comparing the two cases is, that whilst with ethyl chloride the administration period was free from movement and the screaming and struggling did not take place till after 21 seconds of the available anæsthesia period, with somnoform there was a sudden outburst of struggling during the administration and a recurrence of this struggling in an aggravated form with screaming at the 12 seconds of the anæsthesia period. In other words, although both results were bad that obtained from ethyl chloride was distinctly better than that obtained from somnoform.

In Cases 50 (Table II.) and 48 (Table V.) a similar comparison was made. The patient, the method, and the administration remained the same; the only differences were in the kind of anæsthetic and the duration of the fast. Here again a better general result was obtained with ethyl chloride (A.N.V. = 5) than with somnoform (A.N.V. = 2). Consciousness and the conjunctival reflex were respectively lost in about the same time. The administration period in each case was uneventful and the operation period of one case was very similar to that of the other. There were, however, retching and nausea after the somnoform. It is true that the patient had not fasted quite so long before the somnoform as before the ethyl chloride, but the food last taken had been similar on the two occasions and had been of a readily digestible character.

In order that one might compare the anæsthesia produced by such agents as ethyl chloride and somnoform on the one hand with that obtainable by nitrous oxide, nitrous oxide and air, and nitrous oxide and oxygen on the other, I availed myself of the opportunity of anæsthetising a certain patient on five occasions with these five different anæsthetics. I have already referred to the ethyl chloride and somnoform administrations (Case 29, Table II. and Case 35, Table V.). In Cases 44, 38, and 47 (Table VI.) nitrous oxide, nitrous oxide and oxygen, and nitrous oxide and air were respectively employed. When we compare these five administrations to the same patient we observe that the best results occurred with ethyl chloride (A.N.V. = 5), with nitrous oxide and oxygen (A.N.V. = 5), and with nitrous oxide and air (A.N.V. = 5), there being but little to choose between these three results. The patient was a placid subject and was so grateful for what had been done for her that I could not get her to express opinions as to her sensations on the different occasions. The five administrations furnish an excellent illustration of the fact that there are certain subjects who are easily anæsthetised whatever the anæsthetic may be. The comparatively short inhalation period of ethyl chloride administered by Method 5 is an advantage, the administration periods with nitrous oxide and oxygen and nitrous oxide and air being considerably longer. The available anæsthesia in all the administrations was up to, or above, the average for the different anæsthetics and methods employed, the longest being with nitrous oxide and air and nitrous oxide and oxygen, the shortest with pure nitrous oxide. The lightest anæsthesia was with somnoform, the effects of which, as already mentioned, were not quite so satisfactory as those produced by ethyl chloride.

7. CONCLUSIONS.

1. *Methyl oxide.*—When methyl oxide is largely diluted with air the mixture, which is not unpleasant to inhale, does not produce a very satisfactory form of anæsthesia. Mixtures sufficiently concentrated to produce satisfactory anæsthesia are too pungent to be pleasant. As compared to the anæsthesia obtainable by customary means that produced by methyl oxide is of a light type and is not uncommonly followed by nausea and distress. Although a long administration may lead to a long available anæsthesia unpleasant after-effects are liable to result. As with other anæsthetics it is difficult to produce a satisfactory analgesia. In the few cases in which methyl oxide was used there were no indications whatever of danger.

2. *Ethyl chloride.*—This is a useful anæsthetic for certain cases. It is a fairly good substitute for nitrous oxide when this gas cannot be obtained. It is, however, somewhat uncertain in its action, sometimes answering every possible requirement and fully satisfying the patient and his medical attendants, at other times almost failing to produce anæsthesia. Its chief drawback lies in the frequency with which it produces unpleasant after-effects—headache, nausea, vomiting, and an indescribable feeling of depression. There is something almost characteristic in the distress which is liable to follow a full dose of ethyl chloride. There is less phonation under ethyl chloride than under pure nitrous oxide. Micturition seems a trifle more common under ethyl chloride. In addition to the after-effects mentioned a feeling of heat is not uncommon. As a routine anæsthetic for short dental operations ethyl chloride is distinctly inferior to nitrous oxide and oxygen, although it produces a longer anæsthesia. At the same time its portability and simplicity of administration constitute important advantages, especially in crowded out-patient departments and in country practice. In small children who are about to undergo some brief dental or throat operation and in those adults who are bad subjects for nitrous oxide or nitrous oxide and oxygen ethyl chloride will generally answer well. The continuous administration, without re-breathing, of percentage mixtures of ethyl chloride and air does not produce the best type of anæsthesia. The best results are obtainable by means of the apparatus shown in Fig. 1, which allows of a gradual addition of ethyl chloride vapour to a known volume of air breathed backwards and forwards.

3. *Mixtures of nitrous oxide and ethyl chloride.*—By adding ethyl chloride to nitrous oxide a very deep form of anæsthesia is induced with extraordinary rapidity, the method (Fig. 2) having the advantage of destroying consciousness more pleasantly than with ethyl chloride alone.

4. *The so-called somnoform* does not produce such good

TABLE V.—GIVING PARTICULARS OF CASES IN WHICH SOMNOFORM WAS USED.

No. of case in note-book.	Sex.	Age.	Description and diet.	Method of administration.	Inhalation.	Available anæsthesia.	Phenomena: remarks.	Numerical value.
					Seconds	Seconds		
10 (See also Case 11.)	F.	—	Tall and pale; not nervous; tea and bread-and-butter about 4 hours previously.	*Method 1.*—10 c.c. of somnoform diffused into 24,450 c.c. of air; the mixture administered continuously through valves, all expirations escaping.	105	33	Retching and nausea after.	2
19	F.	27	Very nervous; subject to fits. Tea 4 hours before.	*Method 2.*—A known quantity of somnoform diffused into a known quantity of air; some air permitted to gain access with first few inspirations of mixture, all expirations escaping; the pure mixture then inhaled, expirations still escaping; finally, the remainder breathed backwards and forwards. 5 c.c. of somnoform to 14,000 c.c. of air.	159	27	Moderate movement and phonation.	3
20	F.	32	Good colour; good heart sounds; tea and biscuit 6 hours before.	Ditto. 5 c.c. of somnoform to 14,000 c.c. of air.	138	45	Slight movement; giddy after; pleasant induction.	4
21	F.	16½	Good heart sounds; very rapid action; anæmic.	Ditto.	132	42	Slight movement.	5
27	F.	20	Anæmic; medium size; tea and bread-and-butter 5½ hours before.	*Method 3.*—Same as Method 5 of ethyl chloride cases. 5 c.c. of somnoform to 3000 c.c. of air.	93	66	Slight nausea after; pleasant induction.	3
28 (See also Cases 16 and 26.)		19	Average; tea and bread-and-butter 5 hours before.	Ditto.	72	45	Much movement; phonation at 42 seconds of operation period.	1
34 (See also Case 30.)	F.	19	Dark; tall; thin; not nervous; tea and bread-and-butter 4½ hours before.	Ditto.	84	52	Moderate phonation; laboured breathing.	4
35 (See also Cases 29, 38, 44, and 47.)	F.	35	Stout; florid; not nervous. Tea 5 hours before.	Ditto.	75	48	Moderate movement; phonation at 42 seconds of operation period.	3
41	F.	23	Tall; thin; good heart sounds; good type of subject; bacon and tomato and cocoa 5 hours before.	Ditto.	132	66	Slight headache and giddiness after.	4
42	F.	21	Good heart sounds; small build; not nervous; tea and toast 4½ hours before.	Ditto.	92	57	Slight headache.	4
45	F.	40	Thin; quick heart action; nervous; prominent eyes; tea and bread-and-butter 5 hours before.	Ditto.	96	45	Moderate movement; moderate phonation; some excitement; vomiting after.	2
48 (See also Case 50.)	F.	46	Thin; under treatment for her chest; bread-and-butter and cocoa about 3½ hours before.	Ditto.	75	57	Retching and nausea after; pleasant induction.	2
43 (See also Case 39.)	F.	13	Very nervous child; half crying; skim milk and bread 4 hours before.	Ditto. 3 c.c. of somnoform to 3000 c.c. of air.	93	27	Much movement; loud phonation.	1
49	F.	12½	Healthy-looking; not nervous; buttered toast and tea 4½ hours before; 2 buns 2 hours before.	Ditto.	66	33	Slight movement; slight phonation.	4

TABLE VI.

No. of case in note-book.	Sex.	Age.	Description.	Method of administration.	Inhalation.	Available anæsthesia.	Phenomena: remarks.	Numerical value.
					Seconds	Seconds		
44 (See also Cases 29, 35, 38, and 47.)	F.	35	Stout; florid; not nervous.	Pure nitrous oxide administered without any re-breathing, valves acting throughout.	48	36	"Jactitation"; cyanosis.	3
38 (See also Cases 29, 35, 44, and 47.)	F.	35	Ditto.	Nitrous oxide and oxygen administered in the ordinary manner, all expirations escaping.	135	60	Slight movement; slight phonation at 45 seconds in the operation period.	5
47 (See also Cases 29, 35, 38, and 44.)	F.	35	Ditto.	Nitrous oxide administered with an occasional breath of air, all expirations escaping.	108	63	Slight cyanosis.	5

results as pure ethyl chloride and is distinctly more dangerous.[2] The effects produced by the two agents are, however, very similar, as the foregoing cases demonstrate.

Queen Anne-street, W.

MEMORANDUM ON THE RED LIGHT TREATMENT OF SMALL-POX.

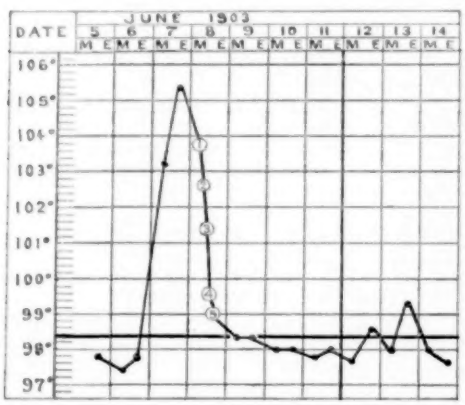
BY J. T. C. NASH, M.D. EDIN., D.P.H. CAMB.

I AM glad to see the late Professor Finsen's[1] reply to Dr. T. F. Ricketts and Dr. J. B. Byles.[2] He has clearly shown the weak points in their arguments and assumptions. Further, it really is not possible to generalise from 13 cases any more than I cared to generalise from 18 cases treated by red light. I inclose some clinical notes of three members of a family treated by red light in May and June, 1903.

The first patient, an unvaccinated boy, between nine and ten years of age, was admitted on the eighth day of the disease, when suppuration was imminent and the course of his temperature showed evidence of slight secondary fever, but even this was, I think, lessened by red light influence. He was a member of a family of Peculiar People, no medical advice was obtained, and the disease was supposed to be chicken-pox until the case was reported to the medical officer of health. He was admitted to hospital on May 25th, 1903, and discharged on July 4th. His highest temperatures on May 25th, 26th, 27th, and 28th were respectively 100·6° F., 99·0°, 99·8°, and 99·0°, after which the temperature was subnormal. The case was tabulated as unmodified discrete small-pox.

The other two cases, one of a vaccinated patient and the other of a patient who was unvaccinated up to the date of invasion and admission to hospital, showed no secondary fever of suppuration.

The second patient, the pyrexial portion of whose temperature chart is here shown, was a boy, aged three years,



The temperatures recorded on June 8th and marked 1, 2, 3, 4, and 5 were taken at 4 A.M., 8 A.M., 12 noon, 4.30 P.M., and 8.30 P.M. respectively. The temperatures after June 14th were subnormal.

who was admitted to hospital on June 5th, 1903. He was vaccinated for the first time on that day. The small-pox eruption appeared on the 7th. The initial symptoms were severe. Half a grain of calomel was administered on June 10th and 13th. There was no suppuration and on convalescence only five small scars were left. The case was tabulated as discrete small-pox unvaccinated up to the day of invasion. The rise of temperature to 99·4° on the tenth day of the illness appeared to be due chiefly to vaccination reaction, which apparently ran an unmodified course concurrently with the small-pox.

The third patient was a woman, aged 33 years, the mother of the children already mentioned. She was admitted to hospital on June 5th, 1903, and was discharged on July 4th. She had three vaccination marks, the areas of which were respectively $\frac{1}{12}$ths, $\frac{1}{16}$ths, and $\frac{1}{4}$rd of a square inch. She was admitted on the second day of the disease. There was no suppuration or secondary fever; the rise of temperature on the fifth day was therefore independent of suppuration. Her highest temperatures on June 5th, 6th, 7th, 8th, 9th, and 10th were respectively 98·8°, 98·0°, 97·8°, 101·4°, 100·0°, and 98·4°, after which the temperature was subnormal. Chlorine mixture was given on the day of admission, and on June 8th and 10th ten minims of tinctura opii and a dose of calomel were given respectively. The case was tabulated as discrete modified small-pox.

By having red panes fitted to the windows ventilation was not interfered with, nor did I have red curtains hung about rigidly to exclude every possible ray of ordinary daylight. Such procedure is, in my humble opinion, both unhygienic and uncalled for.

Southend-on-Sea.

[2] I am indebted to Dr. Moritz for the following information. Three deaths at least have already taken place in Great Britain from somnoform. One occurred at Enfield, another at Llandudno, and a third at Swansea.

[1] THE LANCET, Nov. 5th, 1904, p. 1272.
[2] THE LANCET, July 30th, 1904, p. 287.

FURTHER NOTE ON THE RED LIGHT TREATMENT OF SMALL-POX.

BY T. F. RICKETTS, M.D. LOND., M.R.C.P. LOND.,
MEDICAL SUPERINTENDENT OF THE SMALL-POX HOSPITALS OF THE METROPOLITAN ASYLUMS BOARD;
AND
J. B. BYLES, M.B., B.C. CANTAB., F.R.C.S. ENG.,
ASSISTANT MEDICAL OFFICER AT THE JOYCE GREEN HOSPITAL.

THE article on the red light treatment of small-pox by the late Professor Finsen, which is published in THE LANCET of Nov. 5th, has a pathetic interest. It is the last message of a great physician and we would fain leave it unchallenged. But we are convinced that on this one subject he was mistaken in his views and fear that the prestige of his name will outweigh some want of logic in support of a course of treatment which we believe to be a mischievous one.

Professor Finsen criticised our article[1] on this subject and argued that our cases failed because we did not begin the treatment sufficiently early and he asserted that our patients were put into red light at periods varying from the fourth to the seventh day of their illness. To obtain these figures he has apparently added three days to that day of efflorescence on which, as stated in our table of cases, the patient entered the red ward. This assumption, that to obtain the date when a patient's illness began it is only necessary to subtract three days from the date when the rash first appeared, could not well be more unfortunate and erroneous. In the majority of cases seen in London the rash begins to appear, not on the fourth day as Professor Finsen assumed, but on the third day of illness. And of the cases in which the rash does not come out on the third day, in the majority the rash comes first, still not on the fourth day, but on the second. If it does not come out first on the third day or on the second then, indeed, in many cases it may come on the fourth day; but in others efflorescence may be postponed till the fifth or sixth day, or on the other hand may occur on the very day on which the patient falls ill. In respect of our own 13 test cases we find, on referring to the histories, that the date on which the treatment was begun did not, as assumed by Professor Finsen, vary from the fourth to the seventh day of the illness, but that, as a matter of fact, nine of the patients went into the red ward within 72 hours of the beginning of the illness, two, or probably three, within 48 hours, and none later than the sixth day.

It will be seen from these facts that in small-pox there is a very great variation in the interval which elapses between the onset of the disease and the efflorescence of the rash. But it happens that there is very little variation in the interval between the first efflorescence and the onset of suppuration. If it is accepted that treatment must begin

[1] THE LANCET, July 30th, 1904, p. 287.

not later than the fourth day of the illness that may mean, according to the case, that it must begin a day or two before the rash comes out, or that (in cases where the onset of illness synchronises with the efflorescence) it may be postponed until suppuration is imminent. As suppuration is the event to be avoided, that there is this wide latitude in the time preceding that event at which it is permissible to begin the treatment, is, we are quite sure, something which Professor Finsen never contemplated, though his words lead directly to that conclusion. The misunderstanding or ambiguity which can be traced in all his writings upon the subject arose, we have no doubt, from unfamiliarity with the disease. For his conception of the mode of operation of his remedy was quite clear, though, as we think, very mistaken. The treatment was based upon the assumption that the exanthem is the only thing that matters. He stated [2] that the treatment is not a treatment for small-pox but only for the small-pox eruption. If this is so the date of onset of illness is immaterial and we treated it as immaterial in our former article. What is material is the date on which the eruption comes out and that we gave in all our cases.

In the light of these considerations Professor Finsen's criticism of our results loses much of its force, but it is permissible still to argue that we began the treatment too late. We based our conclusion that our results belied his claims on his published statements as to the date when the treatment should be begun. With regard to this point there is, unfortunately, in his writings a good deal of uncertainty and apparent contradiction. In the article under consideration he quoted his 1895 dictum that treatment should be begun before the fifth day of the disease which, in the majority of cases occurring in London, means the third day of efflorescence. It now appears that as he assumed an unvariable interval of three days between onset and efflorescence the fifth day of the disease means the second day of efflorescence. But in 1898 we find him writing [3]: "It has been seen that the method is favourable not only in the case of patients who are treated a little while before the onset of suppuration but even in its earliest stage." And again in 1903 he says [4]: "If suppuration has begun or is on the point of beginning the red light will not stop it." On the whole we certainly gathered, as we have said, that he believed in the prevention of suppuration if treatment was begun before its imminence. But in choosing our test cases for treatment we did not therefore pick those which were near the suppurative stage. In none of them was suppuration imminent. We preferred to be, as we thought, on the safe side and carefully selected only those patients whose rash was in a quite early stage. In no less than seven of these the eruption was papular only and in four the papules were early and only beginning to appear. The rest of the cases showed more or less vesiculation on some parts of the body but in no one of them was even vesiculation advanced. If red light cannot be beneficially used for all such cases as these, then it ceases to be useful for 50 per cent. of the patients admitted to a small-pox hospital because half the cases will come in with their rash in a more advanced stage than any of ours.

But the important point in answer to Professor Finsen's criticism is that not one of our cases showed any modification or improvement which could be attributed to the red light. They were certainly not all too late. One of them was placed in the red ward on the first appearance of the eruption. In eight of them the eruption was of 24 hours' growth only and when it is remembered that it takes about three days for all the papules of small-pox to appear in a case of moderate severity we see that in these eight cases a great many of the lesions, probably at least half, passed their whole existence in a light bereft of chemical rays—a most pertinent fact in view of the theoretical basis of the treatment. Surely, if there were any potency in the treatment these eight at least would have done well. But what do we find? Two of them died from severe suppurative fever. All of them pustulated and showed secondary fever as much as, or more than, would have been expected of them had they been treated in daylight; in five cases the suppurative fever reached 102° F. or higher—quite an exceptional degree of pyrexia in small-pox of this average severity; and, lastly, they one and all were troubled with complications and the more severe were sent out of hospital with permanent scars. In short, they failed to substantiate any one of the claims which have been made for the red light treatment just as completely as the five slightly later cases, indeed, as it happened, even more completely than these.

We do not see how it can be maintained that our cases were too severe, as Professor Finsen suggested, to be used as a fair average test of the treatment. More than half of them were cases of discrete or mild confluent small-pox, in which the attack could not be described as being even serious. And the strain of disease rife at the time was of an exceptionally mild character. We do not pretend that the cases represented in severity the average of all cases admitted to hospital. So far as we were able we deliberately excluded cases of modified small-pox. For we maintain that it is to the failure to exclude such cases that the apparently favourable results of other observers are to be attributed. But we did not go about to find exceptionally severe cases; it was enough for our purpose that their attacks should be unmodified.

We should like to know at what stage of the disease treatment was begun by those observers whose reports have been favourable. We suspect that their good results were not due, at all events, to an earlier inception of treatment. But unfortunately those writers to whose papers we have had access are silent or vague on this as on other important details. Such evidence as there is supports our belief. Thus Backman,[5] who has published the largest series, says that most of his cases came to hospital a day or two after the appearance of the rash. Oettinger[6] began the treatment in none of his cases until the second day of efflorescence and in most of them later. Yet though his cases were more severe than ours, Professor Finsen[7] quoted his results with approval. Indeed, as showing the efficacy of the method, Professor Finsen[8] quoted one of Feilberg's cases, a case of confluent small-pox in which, before the treatment was adopted suppuration on the face had already become established.

It is difficult not to feel that criticisms of method have been reserved for those who publish unfavourable results. But such criticisms cut both ways. If the unfavourable results must be ignored because the methods of the observers fail to reach a certain standard then equally in similar circumstances the favourable results must be valueless. And the conclusion to which we have been compelled is that if the treatment be effective under conditions more appropriate than ours nobody has yet published any evidence to show it.

[2] Phototherapy, by Niels R. Finsen, p. 28.
[3] Ibid., p. 35.
[4] Brit. Med. Jour., June 6th, 1903.

[5] Finska Läkaresällakapets Handlinger I., xl., No. 5.
[6] Semaine Médicale, 1894.
[7] Phototherapy, p. 28.
[8] Ibid., p. 24.

COLSTON DAY IN BRISTOL.—Colston Day was celebrated in Bristol on Nov. 14th in the usual manner. The collections at the three dinners in the evening amounted to £3589, compared with £4284 in 1903. This sum will be devoted to the charities of the Colston societies.

MILK DEPOTS FOR INFANTS.—A public meeting was held on Nov. 17th, at the Midland Hotel, St. Pancras, London, to advocate the desirability of establishing a milk depôt for infants in St. Pancras. The Right Hon. the Earl of Mansfield took the chair and was supported by some well-known members of the medical profession. Mr. E. R. Moon, M.P. for North St. Pancras, proposed the following motion:—

That this meeting agrees that in view of the excessive mortality and disease among infants it is desirable to form depôts under proper supervision where milk can be dispensed so modified as to meet the needs of individual cases.

Mrs. Garrett Anderson, M.D., seconded the motion, which was carried, and a committee was formed to carry out its objects. Among the speakers were Mrs. Garrett Anderson, Sir Lauder Brunton, Dr. W. H. Dickinson, and Dr. F. M. Sandwith. Dr. Dickinson said that in Liverpool 150 children in 1000 died under the age of 12 months, whereas among those who were fed from the special depôt the number was only 78 in 1000. Sir Lauder Brunton said that farmers should be made to conform to certain rules before they were allowed to send milk to depôts and that it would be necessary for the boroughs to take this matter into their own hands.

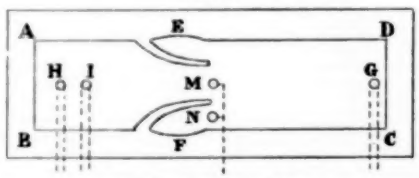
THE MECHANISM OF THE AORTIC VALVES IN HEALTH AND DISEASE.

BY R. J. EWART, M.D., M.Sc. VICT., F.R.C.S. ENG.,
JUNIOR DEMONSTRATOR OF PHYSIOLOGY AT THE UNIVERSITY OF MANCHESTER.

IT often happens in cases of aortic mischief that the valves, when examined after death, are found to be so altered by pathological processes that mechanical efficiency is impossible; and it is surprising how the ventricle has maintained the high pressure necessary for the physiological changes of the body. In some cases where the death has been sudden the valves are found to be almost completely ossified and shrunken to such an extent that the normal mechanism must have been totally destroyed. Yet these valves, since the condition is evidently of long standing, must have offered some considerable resistance to regurgitation, or else any approach to an efficient beat would have been an impossibility. To elucidate the physical conditions of the healthy valves and of such as have been already indicated the following apparatus was devised. It is constructed on the lines of a somewhat similar piece of apparatus described by Professor Hele-Shaw to demonstrate stream line motion and published in the Philosophical Transactions.

Description of apparatus.—It consists of two sheets of thick plate glass, five centimetres by 20 centimetres, between

FIG. 1.



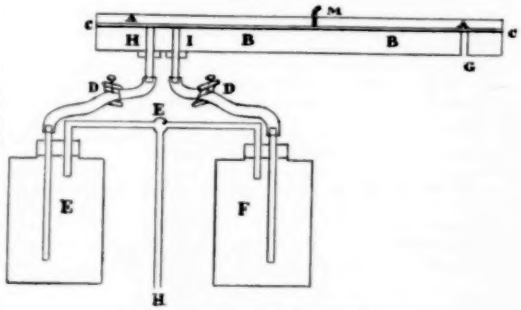
Glass plate as seen from above.

which is clamped a thick piece of cardboard, the centre of which is cut out; a space A, B, C, D is thus inclosed between the plates resembling a vertical section through an aorta. At E and F two bays are shaped to represent the sinuses of Valsalva and from the bases of these bays are two projections cut to represent vertical sections of aortic valves. These are made moveable or rigid, so as to demonstrate the physiological or pathological condition. At H and I (Figs. 1 and 2) are the inlets for blood and saline solution respectively and at G is the outlet. The blood entering at H carries with it a small portion of saline solution entering at I, and thus produces a straight clear line in its path between the plates; hence by observing the nature of this line one can obtain clear indications as to the physical nature of the flow. In the upper plate, at N and M, two small holes are bored. These are connected with two manometers to estimate the pressure on each side of the valve at different times and under different physical conditions. The cardboard separating the glass plates should be from 2 mm. to 10 mm. thick, as otherwise there is no freedom of flow.

Mechanism in health.—It has been shown by direct observation that under physiological conditions the valve during the height of flow lies some distance from the aortic wall. It has been emphasised that unless this were the case the closure of the valve might not take place owing to its adhesion to the aortic wall. A model was constructed with the valves rigidly fixed in the position that they are seen to occupy during systole. This was clamped between the glass plate so that the valve lay between two orifices M and N (Fig. 2). The blood was now driven through the apparatus at a corresponding rate of flow to that which exists during systole in the aorta of a large animal. The pressures indicated by the two manometers showed a difference of only two to five millimetres of mercury. Supposing the pressure during systole to be 200 millimetres the pressure on the wall of the sinus of Valsalva and the aortic aspect of the cusp will thus be 198 millimetres and that on the cardiac aspect of the valve 200 millimetres, which leaves, of course, an outward pressure on this aspect of the valve of two millimetres only.

The comparative elasticity of the aortic valves and corresponding wall.—If the aorta, with its valves intact, is

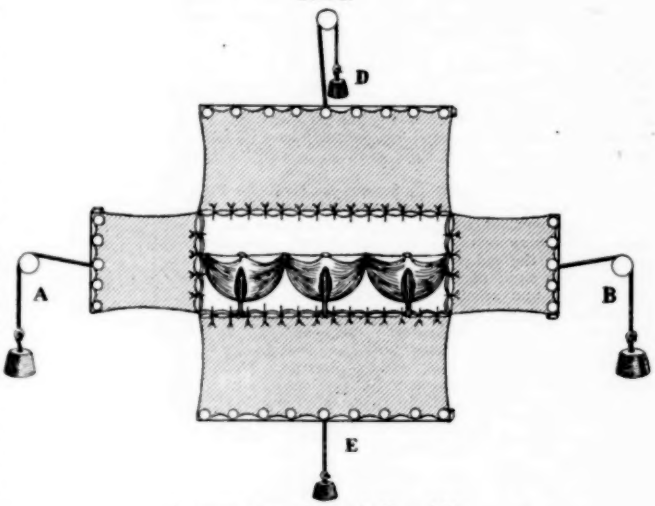
FIG. 2.



Whole apparatus as seen from the side.

cut away from the heart and its other attachments, then opened on its anterior aspect, so as not to injure the aortic cusps, and closely examined, the valves will be seen to be loose and considerably longer between their points of attachment and the corresponding aortic wall. If they are now stretched it will be noticed that a point is reached at which practically the whole strain is borne by the valves and not by the aortic wall. This can be shown more accurately by the following means (Fig. 3). The aorta of an ox is carefully cut away from all its attachments and opened out by snipping down its anterior aortic wall between two cusps. It is then stitched on each side to pieces of calico, as in the diagram, and the calico is fastened to rods, so that the strain when applied may be equally distributed over the whole

FIG. 3.



Aorta opened out and stretched by weights.

aortic wall. With a sharp knife the apices of the valves, together with the corresponding aortic wall, are cut through from below to a point two and a half millimetres from the

edge of the cusp. The same is done from above to a point in the aortic wall corresponding to the free edge of the valve. We thus have a strip of aortic wall with corresponding portions of valve 130 millimetres long. Weights are now put on at A and B (Fig. 3), opening out the sinus to its full extent. To prevent the edges of this strip taking more than their share of the strain and to keep their fibres parallel weights equal to one half those put on at A and B must be put on at D and E.

The actual weight in the intact animal borne by the strip above described will approximately be $\frac{5}{2} \times 130 \times 200 \times 13{\cdot}6 = 884000$ milligrammes, 200 millimetres being the blood pressure and 13·6 the specific gravity of mercury. Now, since the aorta is cylindrical in shape, the above weight is equivalent to a linear distensile force when the aorta is opened out of $\frac{8840}{4} = 2210$ grammes. If this weight therefore is placed on at A and B we have the aortic wall stretched to an extent approximating to that during systole. We now find the valves to be considerably stretched, and if one is snipped through an appreciable lengthening in the aortic wall takes place, amounting to from two to three millimetres. A weight of 400 grammes, one-fifth of the above, is sufficient to stretch the valves to their fullest extent; hence any weight greater than this is supported mainly by them since they are inelastic structures. Now, bearing in mind that the pressure on the valve outwards is only three millimetres of mercury we observe that the weight borne by this portion of the valve measuring $2\frac{1}{2} \times 40$ millimetres is $\frac{5}{2} \times 40 \times 13{\cdot}6 \times 3 = 4080$ milligrammes, which approximately corresponds to a linear distensile force of $\frac{40}{4} = 10$ grammes, a weight acting on the long axis of the valve which can be borne without any appreciable increase in length.

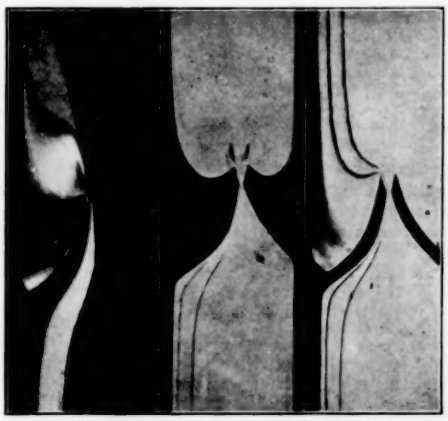
The conclusion from this simple experiment is obvious. During the height of systole the distance between the highest points of attachment of the valve along the aortic wall is some two to three millimetres greater than by the free edge of the cusp itself. Hence, under the physical conditions that exist during systole it could not lie against it.

Mechanism where two valves are diseased, the third remaining healthy.—The principle on which these valves work has from time to time been used in the arts with indifferent success, for the valves sooner or later become inefficient. It appears as if the constant strain stretches them more than the opposing wall and sooner or later the valve-length corresponds to the distance between its attachments. When this occurs the valve is forced against the opposing wall and at the cessation of flow does not leave it; hence free regurgitation is allowed. Something of the same nature may be applied to the aortic valves in the living subject, where the normal relationships are disturbed either through softening from acute inflammatory processes, or more probably through the loss of the natural support which the valves give each other when they close. This condition arises where two neighbouring valves become adherent and sclerosed and the third remaining healthy will have to bear an increased strain and by stretching make some attempt to compensate for the shrinking of its two companions. Such a process is attended with serious dangers, for, as has been already pointed out, the length of the valve will equal the distance between its points of attachment and consequently at the end of systole will fail to open out. This accident becomes more likely when it is remembered that in these conditions the valve by resting against the wall of the sinus is to some extent removed from the direct path of flow. It should be borne in mind that the rate of the regurgitant flow is faster than that during systole, for in the latter case the difference of pressure between the ventricle and the aorta, as shown by Hurthle's differential manometer, is extremely small, while in the former, as is shown by the maximum and minimum manometer of Goltz and Gaul, it amounts to as much as 300 millimetres of mercury. Under these physical conditions an eddy will be formed in the sinus which would further tend to keep the valve against the aortic wall. A disaster of this nature would be attended by immediate cardiac failure and may in some way explain the sudden death that sometimes occurs in cases of slight aortic mischief.

Some exception may be taken to this physical manner of considering the mechanism of these valves, but such a contention cannot be held, for it must be remembered that the cellular activity of these parts is concerned only in maintaining their elasticity and resilience.

The mechanism in conditions where the valves with all the cusps are involved.—If all the aortic cusps are seriously damaged, the mechanism as above described is completely destroyed and perhaps this is the condition most frequently encountered. To take the case where we find the valves thickened and calcified with considerable constriction of the orifice. It now becomes with its corresponding sinus a permanent bay past which the blood ebbs and flows. In Figs. 4 and 5 we have such a condition reproduced. We here see a field of blood with a thin streak of saline solution flowing with it towards the constricted orifice. As soon as the orifice is passed, however, the clear stream disappears and becomes mixed with the blood. The mixing is brought about by the formation of a well-marked eddy behind the cusp. Now, it will be seen that this eddy is flattened towards the centre of the stream and since these eddies naturally tend to assume the circular shape their production offers a further resistance to flow, so that the potential orifice is not measured by the distance between the cusps but by a short tube bounded on each side by the two eddies, which may under some conditions measure as much as two centimetres.

FIG. 4. FIG. 5. FIG. 6.



Photographs of blood and saline flowing through a constricted aortic orifice. Fig. 4, field blood, lines are of saline solution. Fig. 5, field is saline solution and lines are composed of blood. Fig. 6, slower flow to show the formation of waves.

At the end of systole the flow outwards ceases but the eddies will persist for a short space of time and will naturally tend to assume their rounded shape, and thus meeting the one of the opposite side will tend to set up an axial stream away from the heart. The regurgitant flow will, to some extent, be retarded by their presence and it is possible before their complete destruction that a sufficient quantity of blood has entered the auricle from the venæ cavæ necessary for an efficient beat. It is probable, therefore, that these varying motions occurring behind and in the neighbourhood of a damaged cusp materially assist in the approach to physical efficiency.

In speaking of the ejection of blood from the ventricle we are apt to suppose that it leaves it with enormous velocity and that the kinetic energy it thus possesses is sufficient to carry it in its onward course for the length of time during which the ventricle dilates and is refilled with venous blood, but such is a physical impossibility, for, as can be shown by the hæmatachometer the maximum rate of flow rarely exceeds 100 millimetres per second and possibly in aortic mischief might arise to double that, a velocity which corresponds to about three miles per hour, after all only that of a sluggish river, and is not sufficient to account for the efficiency of the heart in these damaged conditions.

The origin of murmurs.—Another feature of the flow

through constricted orifices can be shown on the same model. If the rate of flow is slowed down so that eddies cease and become stream-like, as in Fig. 6, we notice that the lines as far as the valves are straight and after that a distinct series of waves is produced. In this particular experiment the rate of flow was only five millimetres per second and two distinct waves are noticed in every half centimetre in the model, which equals two waves per second. If we increase the rate of flow we increase the length of the wave and its frequency until an audible note is produced. The waves now, however, are too frequent to be reproduced in a photograph. In these actual experiments the component parts were rigid and hence the vibration of the frequency mentioned could not have arisen from them. It arises, therefore, from a simple rhythmical variation in the rate of the flow through the constricted orifice. The rhythm produced is further found to depend upon two factors only—first, the rate of flow and, secondly, the physical nature of the fluid. The actual shape or nature of the bounding edge has apparently no influence on the vibrations produced. The physical nature of the obstructing material has also no effect as long as the size of the orifice is not materially altered.

Rochdale.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

CALOMEL AS A POISON, WITH AN ILLUSTRATIVE CASE.

BY T. L. BUNTING, M.D. EDIN.

CALOMEL is very inconstant in its action as a poison. Guy says that six grains have proved fatal, while an ounce has been taken with impunity. Rungberg records[1] a case in which three injections of one and a half grains each given within one month proved fatal, and he mentions other similar fatal cases after subcutaneous injections of small doses. The general assumption seems to be that calomel itself produces the symptoms of acute mercurial poisoning. But this is contra-indicated by its insolubility, by the fact that it is not a mechanical irritant, by the fact that very large doses have been taken with impunity, and by the great variations in the fatal dose. This difficulty is met by the suggestion, which does not commend itself to Guy, that calomel acts as a poison only by its partial conversion into perchloride of mercury by the free hydrochloric acid of the stomach. On this supposition the very small fatal doses could be explained on the theory of an over acid stomach converting the calomel to perchloride more rapidly than usual, though it is more likely that an impurity (probably the perchloride) was originally present. It is certain that the action of calomel in medicinal doses is by no means always proportionate to the amount given, the purgation produced by one grain being often equal to that produced by five grains or more in the same individual. On the theory that it acts only by conversion into perchloride this is understood on remembering that, as soon as sufficient conversion has taken place, purgation will be brought on and the remainder of the calomel will be expelled unchanged. Calomel injected subcutaneously would in the same way be converted to perchloride by the chlorides of the blood. But in this case the action of a small quantity could not cause expulsion of the remainder. Hence, the fatal cases from small subcutaneous doses. If this be true, large doses of calomel should be borne with impunity by individuals with healthy gastro-intestinal tracts. That this is actually so is proved by a series of cases reported by Dr. Strong.[2] He treated lobar pneumonia by large doses of calomel. In most cases he gave 20 grains every three hours for 24 hours. In one case, that of a woman, he gave an initial dose of 60 grains, followed by 30 grains every three hours, making 360 grains altogether. In none of these cases was there more than moderate catharsis and there was no ptyalism. Dr. A. W. Messer informs me that he has given similar doses with the same result, and repeated doses of 20 grains have also been given with apparent advantage in cholera. A recent case of my own also illustrates the comparative harmlessness of calomel.

A boy, aged three and a half years, obtained possession of a bottle of 120 cachous, each of which contained one grain of calomel, and ate 110 of them. He came under treatment within about 20 minutes. This consisted first of a dose of eight grains of sulphate of zinc. This did not produce emesis, and was quickly followed by apomorphine, one-fortieth of a grain hypodermically, which produced free vomiting. The stomach was then washed out through an ordinary stomach-tube, bringing away more of the disintegrated pink cachous. A solution of bicarbonate of sodium was used in washing in order to neutralise the free hydrochloric acid and so prevent conversion into perchloride. After the washing five ounces of milk were poured down the tube and left in the stomach. The patient immediately fell asleep. Half an hour later he vomited again and then slept undisturbed for nine hours. There was no further vomiting. The first motion of the bowels did not take place until 12 hours after the calomel was taken; it was copious and soft but not liquid. A second motion, which consisted entirely of an almost gelatinous green mucus, occurred four hours later. After that the bowels were moved only normally. The patient never at any time showed any ill effects or any other symptoms than those recorded. Other cachous previously taken from the same bottle had produced their normal therapeutic effect, so there is no reason to doubt their reputed strength.

The absence of ill effects in this case may be largely due to the prompt energetic treatment, so that it alone proves nothing. But as at least half an hour elapsed between ingestion and the first emesis there had been plenty of time for absorption with so large a quantity present, and, further, as washing never absolutely clears the stomach some must have been left. It may therefore be said that this case, together with those mentioned above, tends to show that pure calomel possesses but slight toxic effects and that considerable overdoses may be given over a limited time without fear of either acute or chronic mercurial poisoning. A subsidiary point of interest is the early age at which a full-sized stomach-tube was used. There was no difficulty in passing it.

Scotswood, Newcastle-on-Tyne.

[1] Deutsche Medicinische Wochenschrift, No. 1, 1889.
[2] New York Medical Record, March 19th, 1889.

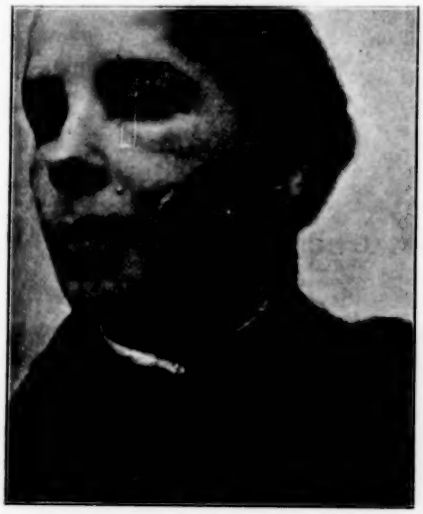
A CASE OF ACCIDENTAL VACCINATION INOCULATION SIMULATING CUTANEOUS ANTHRAX.

BY WILLIAM SHEEN, M.S., M.D. LOND., F.R.C.S. ENG.,
SURGEON TO THE CARDIFF INFIRMARY, ETC.

I send a note of this case as accidental vaccination is infrequent and often puzzling. The patient was seen at the Cardiff Infirmary. She was a woman, aged 30 years, who had on her left cheek a lesion consisting of a central depressed black slough, a quarter of an inch in diameter, with a ring of small, nearly confluent vesicles round, a few of which were broken and exuding a turbid fluid. Beyond this the whole of the cheek was swollen, red, slightly œdematous, and somewhat tender. The swelling extended round the eye, which was partially closed, and also below the jaw, where enlarged and tender submaxillary glands were to be felt. The appearance of the "pustule" is well shown in the reproduction of a photograph kindly taken for me by Dr. Eldon Pratt. The patient's general health was unaffected and the temperature was normal. The woman volunteered the statement that she thought the condition was due to vaccination and said that her baby was done three weeks previously, "took" well, and the places were now drying up. Eight days before the mother's cheek had been scratched by the baby; on the following day a pimple appeared, which two days later became swollen and painful, and then gradually got to the present condition. An examination of the fluid for anthrax bacilli gave a negative result. Boric acid fomentations were applied, and in a week the swelling had nearly subsided and the sore was scabbing.

The case much resembled true anthrax and called to my mind a similar accidental infection which I saw when house surgeon at Guy's Hospital in 1892. The

case was under the care of Sir (then Mr.) H. G. Howse; it is alluded to in his Bradshaw lecture for 1899[1] and I have his kind permission to refer to it. The patient was a girl, aged 19 years, ignorant and stupid. The lesion here also was on the left cheek and the face was greatly swollen and inflamed. No bacilli of



Accidental vaccination pustule simulating anthrax.

anthrax were found. The possibility of vaccination was suggested but the patient denied it and the place was larger than any vaccination vesicle ever seen. There was marked constitutional disturbance and the temperature was about 103° F., so Mr. Howse determined to excise what was obviously a source of general infection. Recovery took place with a somewhat larger scar than was necessary. The patient subsequently admitted that she had been nursing a recently vaccinated child through an attack of fever.

Cardiff.

A CASE OF DIPHTHERIA TREATED WITH MULYPTOL.

By R. HAY MARSHALL, M.B., C.M. ABERD.

A MAN, aged 30 years, consulted me on account of his throat having been painful for two or three days. He had been associating freely with three children and two adults in his home, so I advised his relatives to use mulyptol inhalations as a preventive and recommended him to remain in one room by himself. His temperature was 100·8° F., his pulse-rate was 108, and the cervical glands were swollen. On examining the throat I could see on the left tonsil a greyish patch of membrane and on the right tonsil, the arch and pillars of the fauces, and the uvula there was a grey coloured membrane. He had great difficulty and pain when swallowing even saliva. I swabbed his throat with mulyptol, gave him mulyptol internally, and told him to use mulyptol inhalations. The next day his temperature was normal, his pulse-rate was 100, and his throat was cleaner. By the third day his throat was quite clean, he felt very well and wished to return to work, but in the meantime I had sent a swab from his throat to the medical officer of the Isolation Hospital, Willesden, who reported that he found diphtheria bacilli in the specimen. The patient's convalescence was perfectly satisfactory and uninterrupted, he had no symptoms of paralysis, and none of his household became infected. I was quite surprised at the rapid subsidence of the local and general symptoms under mulyptol exclusively and think that it might be of some service to make the case and its result known.

Willesden, N.W.

[1] THE LANCET, Dec. 23rd, 1899, p. 1717.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

THE LONDON HOSPITAL.

A CASE OF CORTICAL HÆMORRHAGE WITHOUT FRACTURE OR EXTERNAL SIGN OF INJURY CAUSING FITS AND PARALYSIS; OPERATION; RECOVERY.

(Under the care of Mr. C. W. MANSELL MOULLIN.)

FOR the notes of the case we are indebted to Mr. A. I. Simey, late house surgeon.

On May 23rd, 1904, there was admitted into the London Hospital, under the care of Mr. Mansell Moullin, a patient, aged 26 years, in a state of profound concussion. His attendants who brought him up said that he had been thrown from a motor-car on to the pavement, after collision with an omnibus which at the time was drawn up on the left side of the road. The momentum was such that considerable damage was done to the hand-rail and back part of the omnibus. The patient was supposed to have struck the pavement with his head first but there was some doubt as to this observation. At 6.15 P.M., immediately after admission, a rapid examination was made with an absolutely negative result. There was no fracture of limb or ribs—not even a bump could be discovered on any part of the body. He was quite unconscious, having no corneal reflex; the pupils were equal and about from four to five millimetres in diameter. The pulse was slow (60) and slightly intermittent. Whilst his scalp was being examined he raised both hands to the back of his head. His breath smelt of alcohol but it was ascertained that after the accident some brandy had been administered. At 7.50 P.M. a more thorough examination was made and the following notes were recorded. The patient was fairly warm. He had spoken and complained of pain in the head. He had vomited; the vomit had no very definite smell. The pupils were equal and reacted to light; they were rather smaller than on admission. He had told his name and he remembered the accident. His head was re-examined; there was no œdema. There was no bleeding from the ears, nose, or mouth. The knee-jerks were present and equal; the plantar reflexes were glib. He was very drowsy, rather irritable, and he snored. The respirations were 18 per minute and regular. The pulse was 60 per minute and slightly irregular. No injury to the abdomen was detected; the bladder was not full; he had not passed urine or fæces. Later in the evening he became rather noisy and much more restless. His pulse went up to 80 and became somewhat bounding. The temperature, twice recorded, was subnormal. On the following day (the 24th) he became more restless, noisy, and irritable, lying on his side and resenting interference. His temperature rose to 101·4° and remained thereabouts. No localising sign was developed. Vomiting occurred once only. During the 25th and 26th no localising signs were developed, the temperature remaining fairly steady at about 102°. The left pupil was perhaps a trifle larger than the right. There were no motor paralysis and no rigidity. The left knee-jerk was just obtained. There was no further vomiting. On the 27th an ecchymosis was noted about the inner angle of the right eye and involving the conjunctiva. He became drowsy and incontinence of urine occurred for the first time. Vomiting occurred once. On the 28th, at 6.15 A.M., the first fit occurred and was followed by others at intervals of about a quarter of an hour. The following is a description of the fifth taken from notes made at the time. It began with twitching of the left side of the face, then the left arm and the left leg; the leg and arm stopped, then the upper portion of the face, ending with twitching of the lips. The fingers of the left hand were clenched into the palm. In the sixth fit, which occurred at 7.16, the same sequence of events was noted; between the fits the patient was conscious. There was no paralysis left behind after the last fit but incontinence of urine again

occurred. On the 29th two more similar fits occurred at about 10 A.M. but these were followed by paresis of the left side of the face and paralysis of the left arm and leg. The deep reflexes were not increased but were perhaps even slightly less marked than normally. Accordingly, at 2 P.M. the same day he was trephined over the right face area. No fracture was found and there was no extradural hæmorrhage, but on incising the dura mater a considerable clot was found below, and in front of the trephine hole. The opening was therefore enlarged downwards and forwards and the bleeding was found to proceed from a point or points deeply situated which could not be controlled with pressure forceps. Accordingly, gauze plugging was used and two tubes were inserted, and the scalp was sewn up around them. This checked the bleeding. The tubes were removed the next morning and the gauze cautiously (with anæsthesia) during the next few days, which were uneventful, paralysis still remaining complete. Headache was much complained of. There were no more fits and no more vomiting. On June 4th there were signs that the paralysis in the limbs was not quite so complete and during the next few days attempts at movement of the leg were occasionally noted. The patient's headache disappeared and his appetite improved. There was no incontinence of urine or fæces after this date. The left knee-jerk was absent; the right was just obtained. On the 15th very good movement was noted in the left leg—the limb could be flexed on the trunk and the leg flexed at the knee. The patient remarked that he felt a tingling in the left arm and hand as though its functions were returning as in the case of the leg. The left knee-jerk was obtained for the first time and subsequently became somewhat exaggerated. On the 19th the facial paralysis was noted as diminishing, the left eye being closed with ease. Movement was just beginning to return in the left hand and arm. Sensation was quite good to touch and to pin-prick. From this date onwards he improved slowly but uninterruptedly and on July 6th he was well enough to walk out of the hospital and to pick up a pin with his left hand. In August he reported himself by postcard from Scotland as steadily improving, but unfortunately gave no address. He said he remembered nothing of the accident or of the ride which cost him so dearly, but he could recognise the companion with whom he was riding. Treatment throughout consisted of the application of cold to the head, purgation with calomel and croton oil when necessary, an occasional administration of phenacetin and caffein or morphine hypodermically when the headache was troublesome, early massage, and careful nursing.

The points of special interest about the case are the following: (1) the presence of serious injury to intracranial vessels as the result of an external injury which itself left no external mark; (2) the delay in the appearance of grave symptoms; and (3) the extent of recovery after the severe manipulation of cerebral substance necessitated by the operative procedures.

BARNET VICTORIA COTTAGE HOSPITAL.

A CASE OF FRACTURE OF THE BASE OF THE SKULL (POSTERIOR FOSSA) THROUGH THE MOUTH.

(Under the care of Dr. WILLIAM THYNE.)

A BOY, aged five years, was admitted to the Barnet Victoria Cottage Hospital unconscious. There was no motor paralysis of the limbs. Convulsive movements of the right side of the face were observed. The pupils were equal, dilated, and fixed, with conjugate deviation to the left. There was no optic neuritis. There was persistent vomiting. Large tracheal râles were present. The pulse was 140 and the temperature was 105·8° F. The previous history of the case was that the boy was standing on a snow heap holding a piece of gas piping which contained a steel umbrella rib projecting some inches. The steel rib was inserted into his mouth to imitate the bagpipes. He fell and caused the umbrella rib to penetrate the posterior wall of the pharynx. It was extracted by a bystander. There was slight oozing of blood. He appeared to recover and ate some bread-and-dripping. On the afternoon of the following day he became suddenly worse and was admitted to the hospital in the evening. At 11.30 P.M. his temperature was 107·6°, at 12.30 A.M. it was 107°, and at 1.30 A.M. it was 105·2°, after which it gradually fell to 104·8° at 12.30 P.M. on Feb. 18th. It began to rise again and reached 107° at 8.30 P.M., when he died.

Necropsy.—A post-mortem examination revealed congestion of the vessels of the meninges and brain, suppurative meningitis of the base, and laceration of the right cerebellar hemisphere adjacent to a fracture in the right posterior fossa, external to the posterior condyloid foramen. There were no internal hæmorrhage and no injury to the cord. Other organs were not examined. A probe was easily passed through the puncture into the mouth. It appeared that the umbrella rib had passed between the occiput and the transverse process of the atlas.

Remarks by Dr. THYNE.—The case is interesting owing to the route taken by the steel wire and the unusual situation of the intracranial lesion.

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

Discussion on Chloroform Anæsthesia.

A MEETING of this society was held on Nov. 22nd, Sir R. DOUGLAS POWELL, Bart., the President, being in the chair.

Dr. A. G. LEVY described an Apparatus designed for Regulating the Strength of the Chloroform Vapour Administered in the Atmosphere Inhaled and at the same time to restrict its maximum strength within such limits of safety as are compatible with all practical exigencies. The instrument indicated with an approximate degree of accuracy the percentage of chloroform vapour inhaled. He had not hitherto encountered conditions which required more than 3·5 per cent. chloroform and he had therefore made this the maximum. The main principle involved was the suction of air over a surface of chloroform by the respiration and the dilution of the mixture of air and chloroform vapour thus obtained by such a further proportion of air as may be desired before it reached the respiratory passages. The evaporating chamber was annular in form. At one point it was intersected by a vertical radial diaphragm and in the top, to one side of this, a short air inlet tube was attached and on the other side a similar outlet tube. The chamber was made of thin copper and it formed part of the cover of a larger vessel of about a litre capacity. This latter was filled with water at 20° C. and served as a water jacket to regulate the temperature of the chloroform. The chloroform chamber was connected with the regulating valves and face-piece by means of a length of aluminium pressure tubing. The tube was connected at its further end directly to a brass mounting which contained a circumferential air-slot, which might be covered up to any desired extent by a revolving collar. This device he had termed the compensator. This mounting was screwed on to the tubular valves which constituted the regulator. This consisted of two concentric cylinders fitted one within the other, the inner of which could be made to revolve within the outer by moving a lever. The cylinders contained reciprocally acting apertures, one leading from the chloroform chamber and the other communicating direct with the air. When either was partly open the other was shut in the same proportion. Thus the chloroform might be diluted to any desired extent. The lever before mentioned carried an index hand which travelled over a scale indicating percentages of vapour. This scale was plotted out by means of a series of experimental estimations. The air passed from this regulating apparatus through a glass valve chamber in which the strength of the inspirations were measured by the swing of a hinged inlet valve constructed of mica. The hinge was made of oiled silk and the necessary elastic resistance was supplied by a length of thin, spirally-coiled manganin wire. The swing of the valve was measured off on a curved index engraved with marks denoting various degrees of force of inspiration. A curved metal tube connected this chamber to the face-piece, into one side of which was inserted a spring valve, which opened during expiration. In use anæsthesia could be completely induced by this instrument in five or six minutes, proceeding gradually from a 0·5 per cent. mixture to a 3 per cent. or 3·5 per cent. When narcosis was complete the regulator was at once put

back to the 2 per cent. mark and was subsequently manipulated according to clinical indications. One—the most important of these evidences—was the respiration and a complete account of this function was rendered by the action of the valves.

Dr. A. D. WALLER described a New Apparatus for the Production of Anæsthesia by Chloroform. The chloroform apparatus, to which he had given the name of "wick-vaporiser," for the delivery of chloroform and air of suitable and easily governed strength suggested itself to him from the wick carburettor used for certain forms of motor-cars. It seemed obvious that if by evaporation from wicks enough petrol vapour could be got to drive a heavy car at high speed it should be an easy matter to find a wick surface capable of supplying 1 to 2 per cent. of chloroform vapour to, say, 10 to 15½ litres of air per minute—i.e., in liberal excess of the volume of air normally breathed, which might be reckoned as being six litres per minute. To effect this he employed a three-wick lamp with a breadth of wick 66 millimetres, so that a length of 75 millimetres exposed an area of evaporation of 50 centimetres. He found by preliminary trial that at ordinary room temperature this area gave off rather more than 1 per cent. of chloroform vapour to a continuous air current of from eight to 12 litres per minute and that a second and third wick raised the percentage to about 2 per cent. and to nearly 3 per cent. The continuous air stream was secured by a narrow orifice in a metal plate fixed in the tube leading to the vaporiser from an ordinary foot bellows as used by glass-blowers. The wick vaporiser has proved to be extremely convenient for the ordinary purposes of the laboratory and had been tested clinically in two cases. In the first case, with only one wick in action the induction of anæsthesia occupied 12 minutes (it was completed by bringing a second wick into action for the last three or four minutes). In the second case, two wicks were brought into action at once and the induction was completed in five minutes. The anæsthesia was maintained in both cases by one wick + about half of a second wick. The volume of air + chloroform mixture was supplied in both cases at the rate of from 12 to 15 litres per minute.

Mr. EDGAR WILLETT then described Mr. Vernon Harcourt's apparatus, a full description of which has already appeared in THE LANCET.

Dr. B. J. COLLINGWOOD described an apparatus for the Delivery of Chloroform Vapour of Known Dilution. The method consisted of drawing air up an inclined tube down which a pure stream of chloroform was constantly running. There were a series of inlets along the tube which could be opened or closed at will. The amount of chloroform taken up by the air was regulated by opening one or other of these inlets. In this way the air was made to pass over a longer or shorter stream of chloroform. The inclined tube ended blindly in a vessel which received all the chloroform which had not been vaporised. The air was sucked in by two pairs of bellows which acted alternately. Each pair of bellows was connected with inlet and outlet ball valves. The inlets of these valves were in communication by a "T-" piece with the inclined tube, the outlet in a similar manner leading to the delivery tube. The bellows were worked by a horizontal shaft on which two cams were fixed which closed the bellows alternately. These cams were of such a size that one or other of the bellows was always being closed. The opening of the bellows was brought about by weights attached to the handles. Thus the bellows opened independently of the turn of the shaft and always at the same rate; that the rate of opening should be constant was a very important point for any variation in the rate of intake would of necessity produce a variation in the percentage of chloroform vapour.

Dr. F. W HEWITT, in opening the discussion, said that the great question before the society that evening was, How should chloroform anæsthesia be induced and maintained? The question was an exceedingly important one, for there could be no doubt that by the observance of certain cardinal principles chloroform, the most manageable but at the same time the most potent of all anæsthetics, might be robbed of those terrors with which its name had so often been associated. Before proceeding to the consideration of these principles it was necessary that there should be a clear definition of chloroform anæsthesia. There were certain interesting differences between (*a*) simple and (*b*) complex chloroform anæsthesia. By simple chloroform anæsthesia he meant that characteristic state of deep insensibility which was produced by the administration of chloroform to patients *not* undergoing any surgical operation. By complex chloroform anæsthesia he meant that condition which was characterised not only by the phenomena referable to the anæsthetic itself but also by phenomena referable to some surgical procedure which was taking place. The experience of some years had convinced him that it was necessary to realise the differences, often the great differences, between these two states before it was possible thoroughly to understand the nature of the various difficulties and accidents that might arise under this anæsthetic. He asserted that in a large proportion of the cases of chloroform anæsthesia in the operating theatre many of the phenomena customarily attributed to the effects of the anæsthetic were in reality referable to the operation. For example, reflex spasmodic retraction of the tongue, reflex laryngeal spasm, reflex general respiratory spasm might one and all complicate a chloroform anæsthesia which, in the absence of the particular procedures liable to induce such reflex effects, would have been uneventful. Thus, slight but long-continued laryngeal spasm, the outcome of prolonged peritoneal manipulation, might insidiously bring about an asphyxial state altogether foreign to simple chloroform anæsthesia. Or, to give an example from the circulatory side, the withdrawal from the abdominal cavity of a portion of intestine during well-established chloroform anæsthesia might be attended by pallor, feeble or arrested pulse, dilatation of the pupil, and in the worst cases separation of the lids and arrested breathing as the result of cerebral anæmia. He then discussed the question, What were the cardinal principles upon which chloroform should be administered and to what extent did the various instruments which had been devised carry these principles into effect? Most of the present-day authorities on chloroform anæsthesia placed at the head of this list the avoidance of vapour concentration beyond this or that percentage, some maintaining that 2 per cent. and others that 4 per cent. should be the maximum. He held somewhat different views. He would emphasise the necessity of maintaining a free and unembarrassed airway during the introduction of chloroform vapour into the lungs. He had himself either tried or seen in use many most admirable appliances for adjusting chloroform percentages and had observed on many occasions, when such inhalers had been in use, evidences of intercurrent asphyxia dependent either upon some unrecognised condition in the patient himself, preventing or retarding the free entry or exit of atmospheric air, or upon the narrow channels of the inhaler through which the patient had been breathing. The fact was that in addition to the fully recognised paralytic effects of anæsthetics upon the respiratory centres there was an important tendency under these agents for the respiration to become intercurrently embarrassed, and it was the full recognition of the conditions which might lead to this intercurrent asphyxia which in his opinion formed the key to the correct understanding of the vast majority of difficulties and accidents under chloroform. The intercurrent asphyxia to which he specially referred might be brought about in a variety of ways and in many cases the evidences of it were so slight, save to the experienced ear, that the immediate cause of the condition was not recognised. The attention of the anæsthetist must be primarily directed to the maintenance of a free airway. The second principle in chloroform administration was the presentation to the patient of an equable and dilute chloroform atmosphere. He had never seen anything in practice to convince him that there was any special danger in a concentrated vapour except as regarded the amount of chloroform absorbed by the circulation from such a vapour. Snow, Clover, and Paul Bert demonstrated the important fact that over-dosage with chloroform might be avoided by the use of dilute percentage mixtures of chloroform vapour and air, but they all failed to explain satisfactorily deaths occurring in light anæsthesia, deaths which even dilute atmospheres of chloroform could not prevent and which in his judgment were generally referable to intercurrent asphyxia. Whilst there were undoubtedly certain advantages in employing a percentage inhaler there were also certain practical disadvantages which could not be lost sight of. Such inhalers were applicable in only a certain number of cases, so that even if their advantages were greater than they were one would still have to teach students simpler methods. They were comparatively cumbrous, complicated, and liable to get out of order. They occupied the attention of the anæsthetist which should be wholly directed

to studying the special effects produced by chloroform in the patient before him. They were liable to become fouled with blood or other fluids during operations and were incapable, as a rule, of being sterilised. Certain of them were open to the grave objection of imposing a suction action upon the patient, involving a greater or less asphyxial element in the administration. In certain of them, again, the composition of the chloroform atmosphere was liable to considerable fluctuations if the inhaler were suddenly moved, this being in certain circumstances a grave objection. In all of them the induction was slow, many patients complaining of this in practice. In most of them the anæsthesia was not such as to satisfy all surgeons, being distinctly light in type, so that inconvenience, possibly of a dangerous character from a surgical standpoint, might be experienced. In hospital practice in which patients were wheeled from an anæsthetising room to a theatre, it was difficult to prevent partial recovery when using these inhalers. To the man of experience a percentage inhaler was probably useless, for after a few hundreds of administrations he was able to use any simple appliance such as a Skinner's mask in such a way as to keep up an equable vapour of the requisite and proper percentage. To the inexperienced man a percentage inhaler was complex and required a scientific attitude of mind which was not always to be found. Physiologically and academically it was instructive to analyse the phenomena of chloroform anæsthesia, so to speak, by inhalers such as those of Dubois and Waller, which were free from the objection of suction action to which he had referred, and with them to be able to demonstrate to students the different stages of chloroformisation. But Lister, Waller, and Symes had shown, and his experience enabled him to endorse their views, that with a small flannel mask and a drop-bottle a dilute and equable chloroform atmosphere might be presented to the patient, and that with such appliances it was difficult to administer dangerously strong chloroform atmospheres. Indeed, with a small Skinner's frame and with a drop-bottle so adjusted that it was difficult to drench the absorbent surface it was questionable whether there was any greater risk in administering chloroform than in using and attending to the working of a regulating inhaler. The third and last great principle in chloroform administration was to adjust the level or depth of the anæsthesia in each patient so as to obtain the proper conditions suitable for the particular operation without imperilling the safety of the patient. There was in each patient a particular degree of anæsthesia which should be maintained, although it was often difficult to discover the neutral line, so to speak, separating the too light from the too deep anæsthesia. In his endeavour to strike this neutral line the anæsthetist must not only be guided by the personal equation of his patient—some subjects requiring drops, whilst others required drachms—but by the nature and duration of the particular procedure in hand. There were undoubtedly many advantages from the point of view of the anæsthetist in what was now termed moderate anæsthesia. Provided the anæsthetist was alive to the absolute necessity of maintaining a free air-way and that the cornea was kept distinctly sensitive to touch, he questioned whether primary cardiac syncope, such as was feared by many, could ever occur. At the same time this form of anæsthesia was open to two objections—(1) that it was often exceedingly inconvenient to the surgeon; and (2) that it favoured the occurrence of such reflex respiratory difficulties as those to which he had alluded. As a general rule an endeavour should be made to keep the corneal reflex just in abeyance and in those cases in which reflex vaso-motor disturbances were prone to occur to lessen rather than to increase the depth of anæsthesia. When once a profound chloroform narcosis had been produced reflex vaso-motor effects were more liable to occur than in lighter anæsthesia—a conclusion completely opposed to earlier teaching. It was highly probable that the so-called "surgical shock" which was formerly observed when operations were commonly begun during light anæsthesia was in reality respiratory—i.e., asphyxial—in its nature. Up to the point at which the corneal reflex disappeared pulse observations were useless as regards the effects which chloroform was producing. But after this reflex had been lost the pulse should always be observed, for it would not only give valuable indications as to the depth of the anæsthesia but it also afforded information as to any vaso-motor effects which the operation might be producing. He did not consider chloroform the best agent with which to induce chloroform anæsthesia, and whenever circumstances permitted some other anæsthetic or mixture of anæsthetics should be employed to tide the patient over the induction period. There were various ways in which this might be done, the best of all being to use the nitrous oxide-ether sequence till a point was reached at which soft snoring coexisted with the not yet abolished corneal reflex and at this point to substitute chloroform for ether. From this point onwards the risk of chloroform was merely the toxic risk which, with ordinary care, could be altogether avoided, the chief risk—that special to the excitement stage—having been entirely eliminated. In the ordinary run of surgical cases there was no better sequence than the nitrous oxide-ether chloroform sequence. Nitrous oxide was a boon to the patient because by its means consciousness was rapidly and pleasantly abolished; the nitrous oxide-ether sequence completely prevented all struggling and excitement and in two or three minutes rendered the patient fit for the change to chloroform; whilst chloroform itself was eminently adapted for maintaining that form of anæsthesia which was most suitable from the surgeon's point of view and least likely to be followed by dangerous sequelæ. If too much ether was given it was not an easy matter, indeed, it was sometimes hazardous to change to chloroform; but if the change was effected at the particular juncture described a smooth and satisfactory result followed.

Sir LAUDER BRUNTON observed that a careful distinction must be made between deaths from chloroform and deaths during chloroform anæsthesia. He had seen two deaths on the operating table; one was from shock in a case where chloroform could not be given and the other was in a patient just beginning to recover from its effects. Chloroform was one of the most universal poisons known and in sufficient concentration would destroy every living thing, from the lowest bacteria at work, and every living tissue. When introduced into the lungs of a rabbit by artificial respiration it would stop the heart very quickly, while ether left the heart unaffected. Notwithstanding this marked action on the heart, which he was accustomed to demonstrate to his class in St. Bartholomew's Hospital more than 30 years ago, he thought that the chloroform given by inhalation and not by insufflation paralysed the respiration before the heart. He considered that an apparatus for inhalation might be very useful as maintaining a more steady anæsthesia and preventing excess in inhalation; but he thought that such apparatus must always remain of limited application and that the successful administration of chloroform would always remain a question of knowledge and care on the part of the anæsthetist and that his success would largely depend upon his following rules, in maintaining anæsthesia steadily and thoroughly until the operation was over, so as to avoid risk from shock by the operation, shock by the application of too concentrated a vapour to the patient's respiratory passages, and shock, spasm, and suffocation from inhalation of regurgitated food. But care was also required in regard to the position of the patient in order that syncope might not be produced by the head being unduly raised or suffocation induced by interference with the air passages or movements of the chest and abdomen.

Dr. DUDLEY W. BUXTON said that the main interest of the discussion centred in the question of giving known percentages of chloroform. He thought the reflex interference with respiration during induction to which Dr. Hewitt alluded was due in most cases to an excessive strength of chloroform. When the Vernon Harcourt inhaler was used these interferences seldom, if ever, occurred, as a continuous weak but increasing strength of vapour could be employed. It was, of course, most essential that any mechanical inhaler should be regarded merely as a help to the person giving the anæsthetic; he must know the condition of his patient, the requirements of his patient, and could then by graduating the dose to a suitable level often save narcosis. A further important use of such inhalers was that the administrator could achieve accurately the requisite depth of narcosis in different operations—some needed a light and some a profound narcosis. In prolonged operations with severe shock the use of low percentage vapours often saved life by lessening the fall of blood pressure, since this fall went *pari passu* with the strength of the chloroform inhaled. In what Dr. Hewitt had called complex anæsthesia an adequate but light anæsthesia was safer than a profound narcosis, as Embley and Martin's work had shown that vagal inhibition, although dangerous or even fatal in profound narcosis, was of comparatively slight importance in slight narcosis. A prolonged use of the Vernon Harcourt inhaler had convinced him of its value and its safety as well as of its

extreme use in enabling the anæsthetist to control the degree of narcosis.

The debate was adjourned.

PATHOLOGICAL SOCIETY OF LONDON.

Emphysematous Gangrene due to the Bacillus Aerogenes Capsulatus.—A New Blood Fluke of Man.

A LABORATORY meeting of this society was held on Nov. 15th at the London Hospital Medical College, Sir JOHN BURDON SANDERSON, Bart., the President, being in the chair.

Mr. L. S. DUDGEON and Mr. P. W. G. SARGENT communicated an account of two cases of Emphysematous Gangrene due to the Bacillus Aerogenes Capsulatus. The first case was that of a boy, 12 years of age, whose right leg had been run over by a tramcar, and he was admitted to St. Thomas's Hospital suffering from a compound comminuted fracture of the tibia with much laceration and bruising of the soft parts. The wounds were thoroughly cleansed and partially sutured. 12 hours later symptoms of severe toxæmia appeared which rapidly increased. 36 hours after the injury the leg was tensely œdematous, discoloured round the wounds, and gas crepitation could be felt. There was an enormous amount of clear yellow fluid with a disgusting smell issuing from the wounds. An amputation was made through the upper third of the thigh. The flaps were left unsutured and were treated with large amounts of peroxide of hydrogen. Recovery was rapid and uneventful. Cover-slip preparations were made from the emphysematous tissues. Large Gram staining bacilli were present in the films and there were also cocci arranged in groups. The coccus was found to be the staphylococcus aureus. There were no bacilli present in the flaps. A pure culture of the bacillus aerogenes capsulatus was obtained by anaerobic methods, but unfortunately died out before Welch's crucial test could be employed. A bacillus, however, having the well-known morphological and staining characteristics of the bacillus aerogenes capsulatus was present in enormous masses in the muscles of the infected region. The second case was that of an alcoholic woman, aged 37 years, who had been knocked down in the street and was admitted to St. Thomas's Hospital. The right forearm was crushed by a horse's hoof. Severe constitutional symptoms of toxæmia set in 18 hours after admission, and 40 hours after the accident gas crepitation was detected. At this time the forearm was tensely œdematous and the skin was covered with a coppery-red mottling. A red blush extended on the inner side as high as the axilla, but the gas crepitation reached only to the elbow. Amputation was performed through the upper third of the arm. The flaps were left unsutured and were treated with hydrogen peroxide. The patient made an uninterrupted recovery. Cover-slip preparations were made from the emphysematous tissues and from the flaps after amputation. Large thick Gram staining bacilli, non-Gram staining bacilli, and Gram staining cocci were present in the emphysematous tissues, but none in the flaps. Anaerobic and aerobic cultures were made directly from the emphysematous tissues. A pure culture of the bacillus aerogenes capsulatus was obtained anaerobically. The bacillus coli and the staphylococcus albus were obtained aerobically. The bacillus coli culture when inoculated subcutaneously into a guinea-pig's leg only produced an inflammatory swelling which gradually subsided without any evidence of suppuration or emphysema. The bacillus aerogenes capsulatus produced an enormous bloody emphysematous œdema when inoculated subcutaneously in guinea-pigs within 12 hours. Two cubic centimetres of an emulsion of this organism were injected intravenously into a rabbit and the animal was killed under chloroform. The animal's body was then incubated at 22° C. for 24 hours. At the end of that time it was found to be twice the original size. There was general emphysema and all the viscera were "foaming." The bacillus was present in enormous numbers in the foaming liver and a pure culture was obtained under strict anaerobic conditions.

Dr. JOHN CATTO read an account of a New Blood Fluke of Man. He said that at the quarantine station, Singapore, a Chinese coolie, from the province of Fukien, died from cholera. At the necropsy there was an increase of fatty tissue all over the body. The appearance of the peritoneum suggested repeated attacks of peritonitis, for the recto-vesical pouch was obliterated by adhesions and the appendices epiploicæ were thickened and matted together. The lower part of the ileum and the entire length of the large intestine were greatly hypertrophied and enveloped in fat. The mucosa for the same extent was inflamed and congested, with patches of necrosis and ulceration. There was no tendency of the ulcers to perforate. The mesenteric and prevertebral glands varied in size from that of a bean to that of a golf ball. The liver was uniformly enlarged and presented a very coarse fibrosis. In sections of these tissues minute oval bodies with a stout shell were found and were ultimately proved to be the ova of a schistosome by finding bodies in the uterus of a female trematode similar in every respect to those found in the viscera. They measured on an average 70 μ long by 40 μ broad. There was also a nematode infection, for specimens exhibited showed sheathed filaria from embryos near the ova. The adults resembled the schistosoma hæmatobium but the male differed in possessing quite a smooth coat, whereas the schistosoma hæmatobium was provided with ciliated warts. There were also minor anatomical differences in the vas deferens and testes of the male and in the yelk glands and ovary of the female. The ova of the schistosoma hæmatobium were much longer, 0·19 millimetre (Looss), had more pointed ends, possessed a spine, and were darker in colour than those of the new variety. The ova were found in the pylorus, duodenum, jejunum, and upper part of the ileum and pancreas in small numbers, but were found in great profusion in the lower part of the ileum, appendix, and large intestine to the anus, liver, liver capsule, and in the enlarged mesenteric glands. None were found in the diaphragm, round ligament of the liver, or in the vesical mucosa. This was a more extensive lesion than was seen in bilharziosis and whereas the habitat of the schistosoma hæmatobium was reputed to be venous only, that of the new schistosome was mainly arterial. Wherever ova accumulated they provoked a small-celled infiltration which gave rise later to a dense fibrosis. The appendix vermiformis and rectum were the situations most favoured by the ova which formed two layers round the gut. The layer just under the peritoneum was not nearly so dense as the layer in the submucous coat. All the coats of the bowel were thickened and contained ova. Specimens were sent to the International Zoological Congress at Berne, which Professor Blanchard, Dr. Looss, Dr. Stiles, Dr. Ward, Dr. Montichelli, and other zoologists pronounced to be a schistosoma and new to science. Microscopic sections, micro-photographs, drawings and lantern slides were exhibited showing the evolution of the parasite.

LIVERPOOL MEDICAL INSTITUTION.

Extraction of Double Cataract.—Treatment of So-called Concussion of the Brain.—Spinal Cocainisation.—Some Old and New Remedies.

A MEETING of this society was held on Nov. 17th, Dr. JAMES BARR, the President, being in the chair.

Mr. THOMAS H. BICKERTON exhibited a female patient, 76 years of age, upon whom he had operated for Double Cataract. Cocaine was first tried but the patient was so restless that the operation could not be undertaken. A few days later chloroform was administered and a cataract extracted from each eye. The patient made an uneventful recovery and an excellent result as regards vision had been obtained. Mr. Bickerton said this was the first occasion on which he had performed double cataract extraction at one sitting and remarked upon the rarity with which it was necessary to administer a general anæsthetic for operations of this nature.—Dr. K. A. GROSSMANN congratulated Mr. Bickerton upon the admirable result obtained but he considered double extraction at one sitting a very risky procedure and mentioned a case in which he had seen most disastrous results follow.

Mr. W. THELWALL THOMAS read a note on the Treatment of So-called Concussion of the Brain. He referred to recent physiological research which had demonstrated the absence of vaso-motor nerves in the cerebral arteries, the impossibility of producing any effect on the circulation of the brain by applications to the exterior of the cranium, the importance of the cerebral venous pressure, and the control the splanchnic vaso-motor mechanism exercised by acting indirectly through the general circulation. He divided concussion into three varieties: 1. Simple concussion, merely a temporary disturbance of pressure equilibrium within the cranium, which is quickly recovered from. 2. Severe concussion, which he considered to be simply shock.

He deprecated the use of ice-bags in this condition and mentioned cases in which the continued application of ice had perpetuated the symptoms, and recovery had quickly followed on changing the treatment. 3. Continued concussion, in which he considered contusion of the brain and meninges existed. In this condition unconsciousness quickly gave place to irritability, restlessness, and mild delirium. A sedative line of treatment was strongly insisted upon and for this purpose morphine and chloral were greatly preferable to bromides. The importance of absolute quietness, tactful nursing, and the administration of free nourishment was emphasised. Free purgation was not recommended, as it interfered with rest. On returning consciousness the administration of iodides was of marked value, many of the so-called after-effects of concussion, clouded intellect, loss of memory, and headache being thus cleared up. So long as the temperature, pulse, and respiration remained normal, if the patient could be made to take adequate nourishment, the prognosis was good. Long-continued unconsciousness, with paresis, paralysis, or coma, indicated cerebral laceration; and a rise of temperature without a corresponding quickening of the pulse and respiration, together with a loss of control of the bladder and rectum, generally indicated severe laceration and the prognosis was consequently much more unfavourable.—Mr. DAMER HARRISSON, Dr. W. ALEXANDER, Dr. W. B. WARRINGTON, Mr. RUSHTON PARKER, Mr. G. P. NEWBOLT, Mr. E. M. STOCKDALE, Professor C. S. SHERRINGTON, and the PRESIDENT took part in the discussion.

Mr. ROBERT JONES read a note upon Spinal Cocainisation and related several cases in which he had employed it with great advantage. He thought English surgeons were unnecessarily timid in regard to its use. For his own part he believed that under a strict aseptic technique the risk was very slight. He considered it of particular advantage in operating upon persons suffering from advanced phthisis, bronchitis, or asthma, in persons who had a strong aversion to a general anæsthetic and upon whom an operation was urgently needed, and also in those suffering from great shock due to severe injuries of the lower limbs.

Dr. WILLIAM CARTER read a paper on Some Old and New Remedies. The main proposition was that medicinal and other agents could often in an unknown way so modify cells and tissues as to make a diseased person sound and not that they merely relieved symptoms while nature effected a cure. He illustrated this by mentioning cases in which prolonged and most serious illnesses were arrested and the patient cured by using such old remedies as the liquor sarsæ co. concentratus, mercurial inunction, and vinum antimoniale. He drew attention to the fact that the result of examining 25 500 recent prescriptions adopted in the Extra Pharmacopœia showed that not one of these substances was so much as mentioned. He contrasted the opinion expressed on the one hand by Boecker and on the other by the late Mr. Allanson of Leeds concerning the first of these drugs, Boecker simply dismissing it as useless, while Allanson thought highly of it, though unable to explain its mode of action. Among other remedies, succinate of iron in biliary colic and large draughts of pure water in renal colic were mentioned and their utility was illustrated by cases. Reference was made to the useful effects on leucocytosis and chronic splenic enlargements of the x rays and a photograph was shown of a very large and remarkable tumour of the face, which was considered to be malignant by all the medical men who saw the patient; an operation for its removal had been recommended, but under x-ray treatment the tumour had in a comparatively short time entirely disappeared. Lastly, allusion was made to the contradictory opinions of Schmiedeberg and Ringer on the utility of aconite, the first asserting that "saving its value in neuralgias it can be relegated to the obsolete means of treatment," while the second stated that "perhaps no drug is more valuable than aconite," and cases were mentioned showing the extraordinary benefit which the drug was capable of affording in certain conditions of the heart.—Dr. R. E. KELLY, Dr. A. G. GULLAN, Dr. F. H. BARENDT, Dr. E. T. DAVIES, Mr. F. C. LARKIN, Mr. BICKERTON, Dr. R. J. M. BUCHANAN, Dr. C. J. MACALISTER, Dr. N. E. ROBERTS, Mr. O. T. WILLIAMS, and Dr. GROSSMANN took part in the discussion.

EPIDEMIOLOGICAL SOCIETY.—A meeting of this society was held on Nov. 18th.—Dr. B. A. Whitelegge, the President, after referring to the death of Sir John Simon, K.C.B., F.R.S., the last survivor of the little band who, under the presidency of the Earl of Shaftesbury, founded the society in the year 1850, said that he had chosen the Epidemiological Aspects of Industrial Diseases for the subject of his address as that with which he was kept most in touch through his official duties. While admitting that there were many gaps in their knowledge they had data sufficient for drawing valid conclusions. The population engaged in the greater industries did not vary appreciably in numbers, age, and sex constitution or in the conditions under which they worked. They were like the rest of the community under various Public Health Acts, but these were supplemented by the Factory and Workshops Acts which dealt with the conditions common to all and with those peculiar to particular trades and processes. In many of these the temperature was necessarily much higher and in a few lower than the 60° F. aimed at as a rule. Some processes required an atmosphere laden with moisture but this was now restricted as far as possible and adequate ventilation was insisted on. But this had never been defined, the three, four, or five parts of carbon dioxide per 10,000 of pure air being unattainable and the permissible impurity of six, nine, or even 12 parts being quite arbitrary, since no definite relation between the proportion of carbon dioxide in the air and the amount of sickness or the death-rate could be made out. No standard of ventilation was fixed save in a few exceptional cases until 1902, but good results were already apparent. More important was the prevention or removal of dust and fumes or the protection of the operatives by means of moisture, closed apparatus, or exhaust fans, by the use of respirators, or by the substitution of other and safer materials and the exclusion of children and young susceptible individuals. The vaccination of women employed in laundries was a similar precaution, though not at present statutory. Infectious diseases generally were dealt with under the Notification and Prevention and other Public Health Acts. The age constitution of operatives generally was unfavourable to the propagation of infectious diseases but mild, unrecognised cases of small-pox, influenza, or diphtheria sometimes smouldered into epidemics. Small-pox and anthrax were spread by rags, hair, wool, and hides which were often in an extremely filthy condition, as much as 40 per cent. of the weight of dirt being frequently washed out of the rags used for shoddy. The relation of overcrowding to pulmonary tuberculosis in different industries would, he believed, be well brought out in the reports on which Dr. Tatham was engaged. Among communicable diseases of industrial origin were tetanus which had of late appeared somewhat frequently in jute mills, the spores having been imported from the Indian soil; skin diseases on the hands of fish-curers, probably connected with some disease of the fish themselves; and ankylostomiasis, confined at present to certain west-country mines. As to the well-known inorganic poisons—lead, arsenic, mercury, and phosphorus—the different characters of the effects were due to individual susceptibilities, the dosage, and what was practically the same thing, the form or combination in which the poison was presented. Thus the less soluble galena and the silicates were less poisonous than white and red lead and sugar of lead. The dosage and duration of the exposure determined to a great extent the phenomena, in this case paralysis, convulsions, colic, nephritis, and so on. Women were generally more susceptible than men and were prone to miscarriages and sterility, though paralysis was more often seen in men. Arsenic was responsible for fewer deaths than might have been expected and the symptoms caused by minute doses, as in the recent cases of beer-poisoning, differed entirely from those seen in industrial poisoning, and in this light it had been asked if any effects could be traced to the inhalation of arsenical fumes from coal and coke fires. Phosphorus poisoning had been rare since the substitution of red for white phosphorus, the use of the latter in closed vessels, and the inspection of the teeth of the workers, but it might be questioned whether the necrosis was caused by the phosphorus or merely facilitated the entrance of the poison into the system. Workers in arsenic, mercury, lead, and so on, were not as other men, being always under the influence of "therapeutic" doses of these drugs which might predispose them to organic diseases. Hospitals in industrial centres provided abundant material for observation, but statistics were of little value unless attention were focussed on particular processes, apart from the industry as a whole, and the subsequent history of the workers were followed to their deaths which might not overtake them until long after they had left the occupations to which the deaths were due.

A certain degree of acclimatisation was acquired by long residence in an endemic locality and some diseases, as typhus fever, relapsing fever, dysentery, and hospital gangrene, broke out whenever certain conditions existed, in circumstances that, setting aside the hypothesis of an origin *de novo*, compelled one to assume either the extra-corporeal existence of the microbes in the soil or an enhanced virulence of organisms already present in the system in inert or non-pathogenic forms.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.—The presidential address was delivered on Nov. 3rd by Professor J. T. Cash, who dealt with certain points affecting dosage as an element in the effective administration of remedies. The liberal posology of the ancients, which was illustrated by the doses ordered by Dioscorides, Marcellus, and Hippocrates, might be accounted for on the supposition offered by Arbuthnot that a uniform multiple of the amount which the patient was actually intended to receive was ordered so that the method of cure might be screened from the cognisance of the patients. Another explanation might possibly be found in the impurity of the remedies employed, involving a proportionate weakness in their action. The powerful medication of the Middle Ages had now relaxed and the pervading sentiment to-day was to limit the dose to a simple effective proportion. There were many considerations which might be worthy of attention in this relationship. The essential purity of remedies used and the necessity for a wider employment of standardisation in furnishing preparations obtained from vegetable sources were dwelt upon. The introduction of a dosage intended for "frequent administration" was a new feature in the British Pharmacopœia and constituted a step in the right direction, but the term was an indefinite one and afforded too little guidance to the prescriber. It would be more useful if a total or summated dosage permissible for a given time (say 12 or 24 hours) were stated and the physician were then left the discretion of dividing his doses into larger or smaller fractions given at longer or shorter intervals of time according to the exigencies of his case. In order to illustrate the different effects which might be produced by a powerful medicinal agent, according to extent of dose (as stated in fractions of the toxic proportion) and variation of time for administration, diagrams were shown projected from the changes of temperature so produced and evidence was brought forward to show that what might be a suitable interval of time for re-administration of one remedy in order to maintain its action might be insufficient for another which is eliminated more slowly, the effect of the second dose of the latter resulting in an action summated upon the first dose. The President made a strong appeal for the early adoption by the medical profession of the decimal system, emphasising the difficulties of our presently employed weights and measures and the anomaly of our position in this respect, as all great European Powers, Great Britain and Russia excepted, had the advantage of the uniform and excellent decimal method. The lack of a mutual understanding which this isolation occasioned constituted a serious barrier between physicians here and abroad, as it did in every department of international commerce. He advocated the use of a measure (a specimen of which was exhibited) for the patient's use, upon which four marks numbered 1, 2, 4, 8 should indicate a capacity of 2·5, 5, 10, and 20 cubic centimetres respectively. The measure would be purchasable for a few pence and would thus be easily acquired even by the poorer patients. The direction to the patient would not be to take so many cubic centimetres, as this might for a time at any rate occasion confusion, but to take two parts, eight parts, and so on, as directed. The figure 1 on the scale would correspond to a small teaspoonful, 2 to a large teaspoonful, 4 to a large dessertspoonful, and 8 to a large tablespoonful. The spoons which had been so largely used as domestic measures varied enormously in capacity and should be entirely abandoned. Accuracy in prescribing by the physician and in dispensing by the pharmacist was vitiated by want of exactitude in measurement of the dose and as a consequence therapeutical observation became inexact and the treatment of the patient was rendered uncertain.—Dr. Angus Fraser, in moving a vote of thanks to the President, said that he regarded this change in our system favourably and he dwelt upon the great irregularity in the present system of measurement, as well as upon the reduction in dosage of active preparations which had taken place within his recollection.

BRITISH GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held on Nov. 10th, Professor John W. Taylor, the President, being in the chair.—Dr. H. Macnaughton-Jones read notes of two cases of Adnexal Tumours completely concealed by perimetritic effusion and showed, with the epidiascope, lantern pictures of sections illustrative of desquamative salpingitis. He questioned the necessity of hysterectomy if the uterus were not materially affected.—Dr. Bedford Fenwick read notes on Ovarian Disease associated with Uterine Fibroids. In a specimen which was shown he pointed out the extreme thickening in the coats of the ovarian artery due to the pressure of the tumour. There was gross disease in both ovaries and, in his opinion, fibroids in the fundus always indicated removal of the ovaries with the uterus.—The President said that in fibroid disease of the uterus he had met with enormous blood cysts of the ovary, very obscure in their pathology.—Dr. Heywood Smith showed a Uterus containing numerous Fibroids, one of which was already sloughing. The right ovary was converted into a large blood cyst. The patient's temperature had been persistently subnormal, with no symptom suggesting suppuration.—In the adjourned discussion on Mr. Christopher Martin's paper on the Treatment of Severe Prolapse by Extirpation of the Uterus and Vagina, Dr. J. A. Mansell Moullin pointed out that the known efficiency of accurately uniting the fasciæ in preventing or curing an abdominal hernia was an argument in favour of Mr. Martin's new method for very severe cases if the pelvic fascia could be recognised and united as he described.—Dr. R. H. Hodgson suggested that as the fever and suppuration in three of the cases reported did not occur until ten days after the operation but in the fourth began on the second day they were probably in that case due to infection at the time of operation.—Dr. Bedford Fenwick said that Mr. Martin's method left a large raw surface which was necessarily closed by granulation; he would prefer to leave the anterior wall of the vagina and do an extensive colporrhaphy of the posterior and lateral walls.—Dr. Macnaughton-Jones said that though, as Mr. Martin had himself pointed out, the method was not indicated save in exceptional cases, Professor Auguste Martin of Greifswald had successfully extirpated both uterus and vagina in 19 out of 2000 cases of prolapse.—Dr. S. Jervois Aarons said that for a procidentia recurring after hysteropexy, anterior and posterior colpotomy, and perineorrhaphy, it might be well to try Mr. Martin's very ingenious method.—The President said that in his opinion the essential part of Mr. Martin's operation, the rebuilding up of the stretched pelvic fascia, could be obtained in another way without the loss of the entire vagina. In severe prolapse he first treated the cystocele by anterior colpotomy and gathering up the redundant wall of the bladder by a triple continuous and buried suture from the cervix to the urethra. The vagina was afterwards narrowed throughout its length by removing its posterior, and more or less of its anterior, wall. So far he had not had any real failure from this method.—Mr. Martin, in reply, said that he had never had any difficulty in recognising the fascia and sewing the edges together. Infection might come from the rectum or from the ulcerated cervix or vagina. Sewing up the fascia, after removing the posterior wall only, would not cure the cystocele. He appreciated the suggestion that the uterine arteries should be ligatured before the dissection of the vaginal mucosa; it would diminish the arterial hæmorrhage, yet it was from the venous vaginal plexus that the bleeding was most troublesome.

CLINICAL SOCIETY OF MANCHESTER.—A meeting of this society was held on Nov. 15th, Dr. E. S. Reynolds, the President, being in the chair.—Mr. J. E. Platt made a communication on the Pathology and Treatment of Injuries to the Semilunar Cartilages of the Knee-joint. After referring to some points in the manner of causation of these injuries, he described the various ways in which the cartilages might suffer and showed a number of specimens in illustration. In the treatment of both recent and old-standing cases he insisted upon the importance of restoring the tension of the capsule of the knee-joint. Several points with regard to operation were discussed and the importance of previously getting rid of all effusion into the joint was emphasised.—Dr. E. T. Milner agreed with the view as to the inadvisability of drainage after such operation, on the knee-joint, regarding it as a source of danger. But whilst admitting that it was best occasionally to remove some badly fractured or torn

cartilages he considered excision of the semilunar cartilage in cases of recurring displacement as unnecessary, preferring some method of fixation by suturing, which, in his experience, had proved thoroughly satisfactory. He quoted among those on whom he had thus operated men who had subsequently continued their work as colliers and professional football players.—Dr. G. H. Lancashire read a paper on Ringworm. The pathology of the affection in the light of modern research was briefly described and its differential diagnosis was discussed. The various methods of treatment (direct, indirect, and x-ray) were compared and mention was made of a large workhouse hospital where one variety of the croton-oil method had been for many years employed with conspicuous success and with no untoward after-effect, such as baldness.—Dr. A. Knyvett Gordon, speaking from his experience in dealing with ringworm in hospitals for infectious diseases, emphasised the difficulty of eliminating a diagnosis of tinea where the scalp was covered, as was so frequently the case, with scabs and crusts. It was almost a truism in the treatment of the affection that what mattered was not so much what was used as how it was applied. It was futile merely to paint a patch of ringworm with anything. In his own experience he had obtained the best results with pure izal well rubbed in every alternate day and it was sometimes possible to obtain a cure in six weeks by this method; it did not give rise to kerion. Croton oil and chrysarobin were, he considered, somewhat dangerous, especially when the ringworm occurred in a patient suffering from scarlet fever, as the resulting inflammation was often difficult to control.—The following were elected office bearers for 1904–05:—President: Dr. E. S. Reynolds. Vice-Presidents: Dr. A. W. W. Lea and Mr. W. P. Montgomery. Honorary treasurer: Mr. C. F. H. Kitchen. Honorary librarian: Dr. J. W. Hamill. Committee: Dr. W. B. Bell, Dr. E. V. Brown, Dr. P. R. Cooper, Dr. W. E. Fothergill, Dr. A. Fraser, Dr. A. B. Fulton, Dr. E. T. Milner, Mr. David Owen, Dr. R. T. Parkinson, Mr. J. Howson Ray, Mr. J. Rust, Mr. F. C. Scotson, Dr. J. H. Taylor, Dr. W. K. Walls, and Dr. J. P. Williams. Honorary auditors: Dr. J. Gray Clegg and Dr. G. H. Lancashire. Honorary secretary: Dr. C. Christopher Heywood.

TORQUAY MEDICAL SOCIETY.—A meeting of this society was held on Nov. 17th. Dr. W. W. Stabb, the President, read notes of, and showed, three chronic cases. The first was that of a boy, aged nine years, the subject of Congenital Rickets, who had suffered from fractured clavicle and humerus. There were no signs of cretinism and as growth had taken, and was taking, place achondroplasia might be dismissed. There was a large head but with only a few nodules. Both legs had very marked curves in the antero-posterior plane, but the chief deformity was in the thighs, the shafts of both bones being nearly at right angles to the upper epiphyses antero-posteriorly. There was also lateral curvature of the spine. The next case was that of man, aged 61 years, suffering from Lateral Sclerosis consequent on an injury to the spine 21 years before when a heavy iron chain fell on his back. There were nystagmus, ankle clonus on both sides, and a peculiar uncertain gait. He was unable to walk with his eyes closed. There was no wasting. The disease had remained constant and during the 12 years that the President had had him under observation his condition had become better rather than worse. The last case was that of a man, aged 25 years, the subject of constant Choreic Movements of the whole of the Left Side, with Contracture of the Fingers, coming on after an attack of hemiplegia when he was nine years old. The President thought that the diagnosis lay between (*a*) hæmorrhage into the internal capsule; (*b*) embolism; and (*c*) meningeal hæmorrhage over the motor cortex. If the last, would an operation be likely to give some relief?

GLASGOW SOUTHERN MEDICAL SOCIETY.—At the first ordinary meeting of this society Dr. James Hamilton, the President, delivered an address on the Influence which Remedial Agents exercised in the Treatment of Disease. He referred to the widely divergent systems used in the treatment of acute pneumonia, as, for instance, by stimulating expectorants, by cardiac tonics, by sedatives, and by expectant methods solely, under all of which patients passed safely through the ordeal. This naturally raised the general question whether drugs did not after all play a much smaller part than was usually supposed, and, further, as to whether they were not even harmful in a few instances. He contended that questions of treatment should be approached more from the point of view of the causation of disease and showed by referring to Metchnikoff's researches on phagocytosis that there was a natural tendency in all diseases towards recovery provided the patient was placed in favourable conditions. Speaking of adrenalin he said that while he was quite assured of its usefulness when applied locally in hæmorrhage he did not understand how it could be of service in hæmorrhage from the lung, the kidney, or the bladder, as it increased blood pressure from its being a cardiac stimulant.—At the second meeting of the society Dr. T. K. Munro opened a discussion on Cases which Bonesetters Cure. He said that these mainly consisted of old sprains; fractures where adhesions had formed about the callus, or where adjacent joints had become stiff from being kept too long in splints; displacements of the semilunar cartilages; and, lastly, "hysterical joints." He suggested that over-zealous carrying out of Hilton's views on rest and pain might account for some of these evils.—Subsequent speakers related several cases in which bonesetters had shown considerable skill. A bonesetter was said to have reduced a genuine dislocation of the hip-joint, and another to have replaced with apparent ease a semilunar cartilage which under chloroform had baffled the general practitioner.—Dr. Munro, in reply, emphasised the danger of the lighting up of tuberculous processes by heir interference with more or less quiescent lesions.

ÆSCULAPIAN SOCIETY.—A meeting of this society was held on Nov. 18th, Dr. J. S. Risien Russell, the President, being in the chair.—Dr. Alexander Morison opened a discussion on the Pulmonary Signs of Subdiaphragmatic Inflammation. He said that they knew that the common source of subphrenic inflammation was intestinal. When the abdominal signs were pronounced and the history was clear error in diagnosis was unlikely but much difficulty in diagnosis was common. Cases were met with in which a patient, young or old, of either sex, with pyrexia, dyspnœa, pain in one or other side, some basic dulness, serous effusion, and obscured breath sounds easily suggested a diagnosis of empyema or insidious pneumonia as the totality of the illness. Yet such would be at best a partial diagnosis and its partiality might mean a fatal issue, whereas a complete penetration and the assistance of the surgeon might be successful. The great clue to an accurate diagnosis was the fact that the patient was ill beyond the quantity of estimated damage in the chest. Subphrenic inflammation might be mesial and then not affect a lung. Usually the secondary lung affection was homonymous with the focus of infection, the stomach usually affecting the left base and the duodenum the right base. He quoted cases to illustrate these points and mentioned that inflammation connected with a hollow viscus as the stomach or colon might give signs closely simulating pneumothorax.—A discussion followed in which the President related cases bearing on the subject; one was that of a girl with weak basic breath sounds and signs of pneumothorax who showed post mortem no perforation, though the symptoms had suggested that condition, but a very dilated colon behind the stomach and huge scybala in the upper rectum. He was in full accord with the dictum of Dr. Morison that the lung signs were insufficient to account for the marked and serious illness of these subdiaphragmatic states with supradiaphragmatic symptoms.

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.—A meeting of this society took place on Nov. 14th.—Professor Robert Muir, who occupied the chair, delivered the presidential address on the Defences of the Body in Disease. These were grouped under two heads: (1) microscopic—viz., phagocytosis (the activities of certain cells, especially the polymorphonuclear leucocytes and the large hyaline and giant cells of the tissues), which destroy microbes by ingesting and then digesting them; and (2) the ultra-microscopic, present in the fluids of the body and exercised by substances the composition of which was unknown and the presence of which was recognised neither by microscopic nor by chemical tests but by their effects on bacteria or their toxins—antibacterial and antitoxic substances. The defences were treated as normal functions of the organism which were capable of great exaltation in response to the stimulus of invasion. The President discussed the conditions under which phagocytosis occurred, the

classes of cells which possessed this power, and the source from which, and the mechanism by which, the greatly increased numbers necessary for combating disease were supplied. The prognostic significance of the reaction was also considered. Thereafter the President illustrated his address by a lantern demonstration of phagocytosis, leucocytosis and emigration of the leucocytes, and the proliferative changes in the bone marrow. The second division of the defences was then treated, the actions of agglutinins, precipitins, and lysins being demonstrated by test-tube experiments. The President concluded by considering the relations between the two classes of defensive forces, referring specially to Wright's discovery of opsonins, bodies in the serum which affect bacteria in such a manner that they become capable of being taken up and destroyed by the cells, and to the problem of determining where and by what cells the antibodies were formed.—On the motion of Sir Hector C. Cameron a hearty vote of thanks was accorded to the President for his address.

THERAPEUTICAL SOCIETY.—The third annual meeting of this society was held on Oct. 25th, Sir William Thiselton-Dyer being in the chair, when Sir Lauder Brunton was appointed President and Dr. Herbert S. French assistant secretary.—The thanks of the society were given to Sir William Thiselton-Dyer for his services as president. In response he said that under the presidentship of Sir Lauder Brunton the society would continue to prosper.—It was agreed that in future candidates should be elected by the general meeting.—Dr. Arthur J. Harries read a paper on Some Applications of the Continuous Current, which, he stated, might act mechanico-physically (termed cataphoresis), electro-chemically (termed electrolysis), or electro-physically (called catalysis), and he gave illustrations of benefits from each of these actions in cases of rachialgia, arthritic, syphilitic, and other affections, also in cases of stricture, disease of the prostate, and lupus.—Dr. George Crichton read a paper on the Metric System in Dispensing showing the inconvenience of the present system in that it consisted of three different measures, the pound, the drachm, and the minim and fluid drachm, and there was much difficulty in correlating these. In prescribing the gramme was nearly the quarter of a drachm and one-fifth of a cubic centimetre was nearly three minims. Mistakes owing to the wrong position of a decimal point ought not to occur if proper care was used in writing prescriptions.

ROYAL MEDICAL SOCIETY, EDINBURGH.—A meeting of this society was held on Nov. 11th, at which Dr. H. N. Fletcher delivered his presidential address. After thanking the society for electing him their senior president he sketched the History of Early Egyptian Medicine and gave an account of the methods of embalming employed by the Egyptians. He continued by showing how the Egyptian school influenced the Persians and the Greeks and, through them, the Romans, and then how the science was again renewed in Europe as the result of the Arabic philosophers being read in Spain and Italy.—Dr. W. J. Stuart proposed, and Dr. D. C. L. Fitzwilliams seconded, a hearty vote of thanks to Dr. Fletcher for his address.—Dr. D. P. D. Wilkie and Mr. D. M. Barcroft read Notes of Two Cases of Tubal Pregnancy.—The following gentlemen have been elected office-bearers for the current year. Senior President: Dr. Fletcher. Presidents: Dr. A. C. Geddes, Dr. H. J. Dunbar, and Dr. R. W. Johnston. Secretaries: Mr. Barcroft and Mr. J. D. Wells.

MANCHESTER MEDICAL SOCIETY.—A meeting of this society was held on Nov. 2nd, the President, Dr. J. S. Bury, being in the chair.—Professor R. B. Wild read a paper upon six cases in which Malignant Disease had supervened upon Lupus Vulgaris. Three of the cases had been treated by the x rays with temporary relief but finally succumbed to recurrence of the malignant growths. Attention was drawn to the importance of early treatment of all warty conditions of the scar tissue in lupus cases and some statistics were adduced to show that this serious condition was more frequent than is usually believed.—Mr. A. H. Burgess described briefly and showed a photograph of an apparatus for the continuous supply of sterilised water at any desired temperature. Hot water was obtained by turning steam into cold water, the amount of steam, and consequently the temperature of the mixture, being capable of accurate regulation. Sterilisation was effected by subsequently passing the water through a specially constructed three-candle Berkefeld filter.—Dr. S. Moritz read a paper on the Causes, Symptoms, and Complications of the Diseases of the Nasal Accessory Sinuses in their Relation to General Diseases and to Neurology and Ophthalmology.—Mr. F. H. Westmacott showed a series of specimens, drawings, and photographs illustrating the Anatomy and Pathology of the Accessory Sinuses of the Nose.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Nov. 9th, Mr. G. Munro Smith being in the chair.—Dr. A. Ogilvy showed a case exhibiting Peculiar Sequelæ of Iritis.—Mr. A. W. Prichard read notes and showed specimens of (1) a case of Mesocolic Cyst; (2) a case of Intestinal Obstruction from Gall-stone; and (3) a case of Rare Ovarian Tumour.—Dr. Theodore Fisher and Dr. J. M. Fortescue-Brickdale communicated notes of a case of Congenital Hypertrophic Stenosis of the Pylorus and showed the specimen.—Dr. E. W. Hey Groves read a paper on the Advantages of Enucleation of the Tonsils over their Removal by the Guillotine.—Many of the members present discussed the papers.

Reviews and Notices of Books.

Medical Laboratory Methods and Tests. By HERBERT FRENCH, M.A., M.D. Oxon., M.R.C.P. Lond., Medical Registrar, Guy's Hospital; Radcliffe Travelling Fellow, University of Oxford. London: Baillière, Tindall, and Cox. 1904. Pp. 152. Price 3*s.* 6*d.* net.

Dr. French in the preface to this useful little volume states that his object has been to detail the commoner laboratory methods (chemical and microscopical tests and investigations), pointing out the conclusions which may be drawn from the various tests but laying stress upon the fallacies to which each is liable. The result is an eminently practical handbook in which the more common methods and tests employed in clinical laboratory work are detailed and discussed, a highly commendable feature being the statement of the fallacies of many of the more important tests. Chapter I. deals with the examination of the urine and comprises a conveniently arranged account of the chief characters of urines, both normal and pathological, with the chemical tests for the chief constituents and descriptions of the various deposits, organised and unorganised. There are also details of the quantitative methods employed for the determination of the albumin, sugar, urea, uric acid, chlorides, and phosphates.

Chapter II. is devoted to the examination of the blood, and in view of the importance that investigations of the blood have now achieved in the clinical investigation of so many diseases the subject has been dealt with in some detail. In the sections dealing with the enumeration of the corpuscles and the preparation and examination of blood films many useful practical hints are given, which are obviously the outcome of considerable experience of the methods and which are usually absent from the directions contained in many text-books. At the same time, the descriptions are in all cases concise and easy to understand, though in the case of the Widal reaction for typhoid fever a slightly more detailed account would be an advantage.

Chapter III., dealing with sputum, includes the chief methods used in its investigations with the results obtained. No mention is made, however, of the occurrence of hydatid hooklets, actinomyces or other streptothrix organisms in sputum, all of which are of sufficient importance to merit description. Chapter IV., on the Examination of Pus, deals with preparations of films and the microscopical characters of the commoner organisms found. It would perhaps have been better to indicate that microscopical characters alone are inconclusive and that for confirmation cultural and inoculation experiments are necessary in many

cases, though, of course, such examinations are beyond the scope of ordinary clinical methods.

Chapters V. and VI. deal with the examination of the gastric contents and of the fæces respectively and are of the same practical character as that dealing with the urine, especial importance being given to the acidity of the gastric juice and the estimation of its causal factors. In the account of the fæces there are sections dealing with the examination of gall-stones and the characters of the commoner intestinal parasites. Chapters VII., VIII., and IX. include brief descriptions of some parasites of the skin, of the examination of serous exudates and cystic fluids, and tests for some common poisons. The volume is concluded by a useful index.

We can recommend the work as a succinct and practical little handbook for the clinical laboratory and it should be of use both to students working in the wards and to medical men who wish for some intelligible account of the commoner clinical methods. It might be worth while in a future edition to improve some of the diagrams such as those representing actinomyces and the malarial parasites, to add a brief outline of the chief features of urinary calculi and their recognition, and to give an account of the examination of fluid removed by lumbar puncture for purposes of diagnosis.

Elementary Practical Physiology. By JOHN THORNTON, M.A., Headmaster of the Municipal Secondary School, Bolton. With 178 illustrations. London: Longmans, Green, and Co. 1904. Crown 8vo, pp. 324. Price 3*s.* 6*d.*

THIS is a sensibly written text-book well adapted for the instruction of the higher classes in schools. It makes no pretensions to novelty in substance or in arrangement but simply gives a clear and intelligible, though necessarily brief, account of the chemical composition of the body, the disposition of its several organs and tissues, and the functions of the various organs. The author contents himself with stating general facts without entering into minute details, though as the following quotation will show he supplies the student with such information as will enable him to understand the phenomena described. After giving an account of the pulse in the arteries he continues: "There is no pulse in the capillaries nor in the veins, for the jerky flow in the arteries is converted by the elasticity of their walls, by the friction that the blood in its progress has to overcome, and by the greater sectional area of the capillaries into a slower and steady continuous flow in the capillaries and veins. A cut artery not only spurts out the blood but spurts it out in jerks owing to the pulse wave, whilst the blood flows from a vein in a steady stream." The facts and the explanation are here well given and the student has little to learn on this subject when he reads a larger work. The illustrations are for the most part appropriate and well executed, though, of course, few are original. There is a glossary giving the pronunciation and the derivation of many of the terms in common use in physiological works, a table sets forth the numerical data or weight and size of the elementary structures, and there are some questions which may prove useful for testing the accuracy of the knowledge acquired by the student in reading the successive chapters. The work is well adapted to the purpose for which it is intended.

LIBRARY TABLE.

Elements of Surgical Diagnosis. By A. PEARCE GOULD, M.S. Lond., F.R.C.S. Eng., Surgeon to the Middlesex Hospital; Member of the Council of the Royal College of Surgeons of England and of the Examining Board for England; Member of the Senate of the University of London. Third edition, revised and enlarged. London, Paris, New York, and Melbourne: Cassell and Co. 1903. Pp. 607. Price 7*s.* 6*d.*—This book has been widely used since its first appearance and the recent advances of surgery have necessitated extensive alterations. The whole text has been revised and much has been rewritten. The most material changes perhaps are those connected with abdominal affections, the bacteriology of disease, and with skiagraphy. As an example of the arrangement of the book we will give a summary of one chapter. We will take the chapter on the diagnosis of acute abdominal affections, a chapter introduced now for the first time. The author commences by naming the 19 different conditions which may give rise to acute abdominal symptoms. Then he proceeds to the various points on which the diagnosis is based. First comes pain, and the modes of onset, the times of onset, and the characters of abdominal pain are described. Then vomiting, collapse, rigidity of the abdominal wall, and the presence or absence of a palpable tumour, the results of percussion, rectal and vaginal examination, the previous history of the patient, the action of the bowels, leucocytosis, and stethoscopy are in in turn discussed, and having traversed all this ground, the author shows how the signs and symptoms are weighed in order to attain to a correct diagnosis. We have but little to add to the commendation bestowed on the first edition. The book is a thoroughly trustworthy guide.

Handbook of the Anatomy and Diseases of the Eye and Ear. By D. B. ST. JOHN ROOSA, M.D., and A. EDWARD DAVIS, M.D. Philadelphia: F. A. Davis Company. 1904. Square 12mo, pp. 297. Price $1 net.—Two-thirds of this little book are devoted to the anatomy and diseases of the eye and one-third, or about 100 pages, to the anatomy and diseases of the ear. There are no illustrations. The authors consider that both the undergraduate and the post-graduate need manuals on the eye and ear which, to be of use, must be succinct and lucid. They have succeeded in condensing the more important facts into a reasonable compass and the book is so small that it may be carried in the pocket into the wards or the out-patient room and referred to when the several cases have been diagnosed by the teacher. The directions for treatment that are given under the head of each disease are brief and appropriate and as an introduction to one of the larger treatises, of which there are now so many, it may be recommended to the junior practitioner. The authors are well acquainted with the subjects on which they write and both are teachers and are therefore conversant with the wants of the student. The teaching is, as it should be in such a work, dogmatic. Many of the Greek words from which the ordinary ophthalmic terms are derived are accented; why not all? Dr. Davis very properly denounces the practice of puncturing the membrana tympani in acute or chronic inflammation of the middle ear in every case with redness of the membrane and slight effusion in the middle ear. An unnecessary paracentesis of the drum-head in acute otitis media may render the tympanum more septic than before and is sometimes, he adds, "more dangerous than a simple opening of the mastoid cells."

Ceylon: Administration Reports, 1903. Part IV.: Miscellaneous. Medical. Report of Sir ALLAN PERRY, Principal Civil Medical Officer and Inspector-General of Hospitals. Pp. 71.—In this report it is stated that the birth-rate was 40·0 per 1000, against 38·5, and the death-rate 25·9 per 1000, against 27·5, in the previous year, calculated on the estimated population at the middle of the year. The public health during the year was good; there were few outbreaks of epidemic disease and the numbers attacked for each of the more serious infectious diseases were less than in 1902 (with the exception of enteric fever). The increase in the number of cases of enteric fever (an increase of 115 cases and of eight deaths) Sir Allan Perry believes

to be a real one; at the same time he points out that the notification of these cases is becoming more general and that the bacteriological aid in diagnosis is more used by medical men. The cause of the increase is put down to contaminated water and the use of cesspits. It is satisfactory to note the small number of cases of cholera. The comparative freedom may be attributed to the closure of the North Road coolie route and to the quarantining of coolies at Ragama. The total number of cases was 46 with 23 deaths. There was a marked falling off in the admissions to the hospitals from malaria. There were 29 cases of small-pox recorded, with five deaths; they occurred in the western, central, and north-western provinces. Of the 29 cases seven were unvaccinated, 21 were vaccinated, and one was revaccinated. 2384 cases of dysentery were admitted to the hospitals. The percentage death-rate was 27·6. In the jails the percentage death-rate from this cause was 3·14. December and January are the worst months for dysentery and the reason of this Sir Allan Perry sees in the comparatively cold nights producing chills. Cholera belts and flannel shirts have been recommended for prisoners during this season. The total number of cases of leprosy reported shows an increase of 29 cases. Ankylostomiasis is constantly introduced from India by Malabar coolies and is spread owing to their careless habits. This disease is on the increase. There were 1775 admissions in all the hospitals, with 272 deaths. Under the heading of Parangi Sir Allan Perry observes that the disease is essentially one of poverty and that whether it is a variety of syphilis or not the fact remains that the better-nourished people do not suffer from it. The death-rate from this disease is remarkably small; out of 3254 admissions during the year there were only 11 deaths. The general sanitary condition of the island remains in much the same condition as last year. The same methods of disposal of sewage and refuse exist. The water-supply is often very good and steps are being taken every year to remedy defects. In an appendix there is a report upon malignant disease in Ceylon. The following is the summary: (1) the number of cases per annum is about 220; (2) that cancer is a comparatively slight disease in Ceylon; (3) that it is more common in males than in females; (4) that the average age is over 40 years; (5) that the most common sites of cancer are the oral cavity and the generative organs; (6) that relatively cancer is most common in the northern province of Ceylon; and (7) that sarcoma is much rarer than carcinoma.

Guide to the Examination of the Throat, Nose, and Ear for Senior Students and Junior Practitioners. By WILLIAM LAMB, M.D., C.M. Edin., Honorary Surgeon to the Birmingham Ear and Throat Hospital. London: Baillière, Tindall, and Cox. 1904. Pp. 152. Price 5*s.* net.—In this little book the writer has aimed at being extremely elementary. He has tried to anticipate the difficulties which the student or young practitioner is likely to meet with. For each region a sketch of the normal topography and appearances is first given and this is followed by an outline of the principal alterations from the normal which may be met with. This small work will meet a want which has been felt, for no other work covers exactly the same ground. The book is fully illustrated with 32 engravings and the letterpress is well arranged and is set forth in a manner which engages the attention. A few practical hints on local treatment have been added.

A Manual of Personal Hygiene. Proper Living upon a Physiologic Basis. By American authors. Edited by WALTER L. PYLE, M.D. Second edition, revised and enlarged. London, Philadelphia, and New York: W. B. Saunders and Co. 1904. Pp. 441. Price 6*s.* net.—The object of this manual is to set forth the best means of developing and maintaining physical and mental vigour. Throughout the book there is concise but adequate discussion of the anatomy and physiology of the parts under consideration and upon these the advice given is based. Technical terms have been avoided as far as possible and numerous diagrams and illustrations explain the text. The first edition was well received and for this new edition the work has been thoroughly revised and additions have been made of sections on Domestic Hygiene and on First Aid in Medical and Surgical Emergencies. A valuable addition is an illustrated system of home gymnastics. An appendix contains a description of the simpler methods of hydrotherapy, thermotherapy, and mechanotherapy. The advice given is sound and this second edition will no doubt maintain the popularity which the book has hitherto enjoyed.

JOURNALS AND MAGAZINES.

The Journal of Physiology. Edited by Sir MICHAEL FOSTER, K.C.B., F.R.S., and J. N. LANGLEY, F.R.S. Vol. XXXI., No. 6. London: C. J. Clay and Sons. 1904. Pp. 78. Price 4*s.* 6*d.*—This part, which is the last of the thirty-first volume, contains in addition to the index the following articles. 1. The Action of Pituitary Extracts on the Heart and Circulation of the Frog, by Percy T. Herring, M.D. Edin. The author finds that extracts of the infundibular part of the pituitary body cause acceleration and augmentation of the isolated ventricle of the frog when perfused through it. Strong extracts (4 per cent.) of the dried material increase the contraction of the ventricle, abolishing the pause after diastole and inducing a pause at the end. If continued the perfusion causes the heart to remain in tonic contraction. The infundibular portion of the pituitary body contains some substance or substances which act on both the intrinsic inhibitory and the intrinsic accelerator nervous mechanism of the heart. The active substance in the pituitary body which brings about constriction of the peripheral arterioles acts by stimulating the vaso-motor nerves and this action is abolished by a large dose of apocodeine. 2. On Osmotic Pressure of Solutions containing Native Proteids, by Professor E. Waymouth Reid. 3. Some Observations on Blood Pigments, by P. P. Laidlaw, B.A. 4. On Heat Contraction in Nerve, by T. Grigor Brodie, M.D. Lond., F.R.S., and W. D. Halliburton, M.D. Lond., F.R.S., with four figures in the text. 5. The Oxygen Exchange of the Pancreas, by J. Barcroft and Professor E. H. Starling. These experimenters show that pancreatic secretion is accompanied by an increased oxygen absorption from the blood by the pancreas. 6. On the Anti-tryptic Action of Normal Serum, by E. P. Cathcart, Research Student in Pathological Chemistry, Lister Institute. This part also contains the Proceedings of the Physiological Society for August 19th.

The Practitioner.—The November issue of the *Practitioner* offers at least three valuable articles for perusal. First, there is a most attractive and clear account of the present position of our knowledge with regard to some of the problems of the cortical representation of sensation, from the pen of Sir Victor Horsley. The combination of clinical facts with minute histological investigation and an unusually lucid style of exposition to illustrate both render this article not only very interesting to read but also easy to assimilate even for those who are not familiar with the special lines of study in which Sir Victor Horsley is a master. Mr. P. Lockhart Mummery contributes an important chapter to the subject of the Treatment of Carcinoma of the Rectum. Mr. Mummery describes the present position of surgical measures commonly taken in these cases and points out how earlier diagnosis and more successful operative steps are possible. He regards colotomy as no longer the ultimate palliative measure but only as essential when obstruction is beginning or as preliminary to excision. The third article to which we refer is by Mr. H. S. Clogg on Congenital Stenosis of the Pylorus.

Analytical Records

FROM

THE LANCET LABORATORY.

(1) "SOLOID" EHRLICH TRIPLE STAIN; (2) "SOLOID" HEMISINE COMPOUND; AND (3) "TABLOID" DONOVAN SOLUTION.

(BURROUGHS, WELLCOME, AND CO., SNOW-HILL BUILDINGS, LONDON, E.C.)

(1) FOR the preparation of the Biondi-Ehrlich-Heidenhain triple stain one soloid of the stain is dissolved in 25 cubic centimetres of distilled water and one soloid of acid fuchsine in two cubic centimetres of water and the solutions are mixed. The mixture keeps well and is ready for staining blood films. In well-fixed and successfully stained specimens the colour to the naked eye is orange or orange-red, in underheated specimens the colour is dark red or reddish-brown, while in overheated specimens the colour is pale yellow. The erythrocytes should be coloured orange; the granules of the neutrophile polymorphonuclear cells and of the neutrophile myelocytes should have a violet and the acidophile granules of the polymorphonuclear cells a brick-red colour. The nuclei are coloured greenish blue; the basophilic granules of mast cells are unstained and surround a pale green nucleus. In the lymphocytes the nucleus is stained a pale greenish blue but the cytoplasm takes a faint pink or grey colour. In morbid blood the nuclei of the erythroblasts are stained greenish black. (2) The compound hemisine soloid is intended for local anæsthesia. It contains $\frac{1}{4}$th of a grain of hemisine, a derivative of the suprarenal gland, 12½ grains of common salt, and three grains of eucaine hydrochloride. Hemisine has no anæsthetic properties but it has been found that the action of cocaine and eucaine is enhanced by association with it. The advantage of the hemisine soloid is that it presents the hæmostatic principle of the suprarenal gland in a dry soluble state so that the use of an active solution may be insured. (3) The "tabloid" Donovan solution is equivalent to five minims of liquor arsenii et hydrargyri iodidi B.P.

CALORIT.

(CALORIT, 16, VICTORIA-STREET, LONDON, S.W.)

"Calorit" is a novel and ingenious departure in connexion with the preservation of foods and one by means of which food may be extemporaneously heated to a suitable degree for consumption. The food is contained in a hermetically sealed tin provided with a tin jacket containing in its upper part quick-lime and in its lower part water. The water and quick-lime are brought together by turning the tin upside down and pricking holes in the tin division which separates the two substances. After standing upside down for about five minutes the tin is placed in its normal position. The interaction takes place quite quietly and the soup or food in the inner tin is heated, according to our experiment, up to about 170° F., which is about the temperature at which a hot soup can be conveniently borne in the mouth. In addition to soups, entrées and so on may thus be served hot. The idea has obviously a number of useful applications and we can imagine many a tired invalid or traveller being grateful for this innovation. The calorit which we examined contained an excellent julienne soup. There was no evidence of any corrosion of the tin or of any metallic contamination of the soup.

VINODE MEDICATED WOOL.

(VINCENT WOOD, VICTORIA HOUSE, ALBION-PLACE, BLACKFRIARS-BRIDGE, LONDON, S.E.)

This medicated wool is regarded as a substitute for the poultice and is to be applied to the affected part and worn until the medicament is absorbed. The wool is dark brown in colour and the basis is evidently ordinary cotton wool. On shaking with chloroform some iodine is extracted so that the wool contains a small quantity of iodine in the free state. This treatment with chloroform does not appreciably affect the colour of the wool. On warming, however, with potash the brown colour entirely disappears, leaving ordinary white cotton wool and the solution was found to contain a considerable quantity of combined iodine. We conclude, therefore, that the wool consists of a loose chemical combination of iodine and cellulose.

SCHERING'S BETA-EUCAINE LACTATE.

(A. AND M. ZIMMERMANN, 3, LLOYD'S-AVENUE, LONDON, E.C.)

Eucaine as an anæsthetic has advantages over cocaine but hitherto the drawback to its employment has been the comparative insolubility of the beta-eucaine salts, the hydrochloride having been generally used for the purpose. The lactate, however, is readily soluble, to the extent, in fact, of about 25 per cent. This salt may be used in the same way as cocaine and the solution is non-irritant, while it is stated that it does not cause hyperæmia, ischæmia, or tension but produces only local anæsthesia. Lactate of eucaine is a white crystalline non-hygroscopic powder.

WANNIECK'S GRAPE JUICE.

(ALEXANDER, FLETCHER AND CO., ST. HELEN'S-PLACE, LONDON, E.C.)

We have received several specimens of this grape juice, described respectively as "Traminer," "Burgunder," "Tannhofer," and "Muskatirt." These names may be taken to indicate that each is derived from a special class of grape. We selected the Muskatirt for analysis and the following results were obtained: extractives, 14·25 per cent.; mineral matter, 0·30 per cent.; glucose, 10·00 per cent.; and tartaric acid, 1·13 per cent. The juice was in an excellent state of preservation but contained no antiseptics and, in fact, is sterilised.

PEPTONISED MILK FOOD COCOA.

(ALLEN AND HANBURYS, LIMITED, BETHNAL GREEN, LONDON, E.)

This consists of a dry powder, having a pleasant flavour of malt and of cocoa. It is prepared with cocoa and with the Allenburys Milk Food and during its manufacture it is peptonised. It is not surprising, therefore, to find that no less than 65·50 per cent. of the food is soluble in water. This solution contains maltose and the products of proteid hydrolysis. The moisture amounted to 3·20 per cent., the fat to 17·10 per cent., and the mineral matter to 4·57 per cent. By its use a pleasant and decidedly nourishing beverage may be prepared and its easy digestibility makes it suitable for use by invalids.

PRÆVALIDIN.

(THOMAS CHRISTY AND CO., 4, OLD SWAN-LANE, LONDON, E.C.)

Prævalidin is an ointment containing chiefly camphor but there are also present eucalyptus, rosemary, and balsam of Peru. The preparation is employed in the camphor inunction treatment of pulmonary tuberculosis and the results of its use are recorded in a paper published in the *Berlin Clinical Journal*, No. 18, 1904, by Walter Koch, M.D., assistant physician to the University Polyclinic, Freiburg in Baden. According to this paper the effect of camphor is very marked and the inunction treatment appears to be as effectual as the administration by injection. After its use it is stated that there was an enormously increased and much less difficult expectoration, "gradually decreasing in quantity until it ceased altogether." The temperature, further, was reduced to normal, night sweats ceased, the appetite improved, and as a result of the greater amount of nourishment taken the body-weight was increased. The ointment, under the direction of the medical attendant, is rubbed on the back on the first day, on one arm on the second day, on the other arm on the third day, on one thigh on the fourth day,

and on the other thigh on the fifth day. The results are of interest but it is desirable that they should be tested by other observers.

OLD SCOTCH WHISKY No. 10.

(JAMES WATSON AND CO., SEAGATE, DUNDEE.)

Misleading terms are so often used in describing potable spirits that it is satisfactory to find that in the case of this whisky it is honestly described. On the label are printed the words "age and quality guaranteed" and "very fine." The quality is certainly excellent and the mellow and delicate flavour of malt indicates maturing by age. Further, the results of our analysis are consistent with those yielded by genuine malt pot-still spirit. They were as follows: alcohol, by weight 40·80 per cent., by volume 48·21 per cent., equal to proof spirit 84·49 per cent.; fixed acidity reckoned as tartaric acid, 0·015 per cent.; and extractives, 0·12 per cent. The secondary products given in grammes per 100 litres of absolute alcohol present were as follows: volatile acidity reckoned as acetic acid, 31·20; aldehydes, 15·0; furfural, 4·15; ethers reckoned as ethyl acetate, 73·0; and higher alcohols, 207·0. Thus the total secondary constituents amounted to 330·35.

Looking Back.

FROM

THE LANCET, *SATURDAY*, NOV. 25, 1826.

Contracting in my progress, what many wiseacres would be pleased to call an idle habit of looking into reviews, journals, and medical biography, the intellectual feats of Scottish Crichtons recorded in these pages struck my imagination with the force of a scientific romance. Here I ever found the appellation of "nurse of science," "the modern Athens," the "cradle of philosophers," ready at the point of some patriotic pen, to do homage to this land of learning. It was consequently the "Mecca," the "Delphic Oracle," the "Vale of Egeria," to which all studious pilgrims should resort to drink of the pure springs of knowledge; in short, the idol brightened as I gazed, until, purged of all earthly traces of imperfection by the intensity of my admiration, it shone forth at length the true divinity of my worship. All this I conscientiously believed, and could I help it? I was told it, read it, heard it in every possible shape and form, and could I be less than Pyrrho himself, to doubt the truth of my convictions? My faith, to be sure, was essentially Christian in its nature, being based on a series of mysteries which I could not comprehend; but enough of the inheritance of Eve fell to my lot to desire to eat of the "forbidden tree," to examine with my own eyes what other causes besides cool breezes and elevated scenery could have contributed to adorn the halls of Edina with so many trophies of genius, and whether, in a practical point of view, the student's opportunities of acquiring information were proportionate to the fame which the presence of many illustrious individuals had conferred on her institutions.

Such were the feelings whence my opposition to your opinions originated, when your patience giving way, and your eye sparkling with indignation, you abruptly replied, that the days of Dr. Salts[1] and the village *alumni* of the Scottish Universities were passing away; that their former celebrity was no compensation for their present defects, and that a new and a better order of things was in progress of development. Universities having abused their privileges, should be deprived of the power of conferring degrees, the usage being no longer applicable to the exigencies and circumstances of a profession which had grown sufficiently numerous and important to constitute an independent body for the management of its own affairs, the improvement of its art, and the education of its members. Instead of the three or four Corporations which at present preside over the destinies of Medicine in England, Scotland, and Ireland, each of which Corporations, while they all arrogate an infallibility in their councils, legislate in direct opposition to each other, one college would suffice in each of these countries, in the government of which all its licentiates should equally participate. In conformity with this plan the instruction of every practitioner should be the same, as it was most fully ascertained that the splitting of medicine into physic and surgery made divisions but no distinctions. For the more easy and economical attainment of this object, four professorships,—one for natural history, another for chemistry, a third for anatomy, and a fourth for medicine,—would answer the purpose. Under these four heads was comprehended the whole range of medical science, and for the poor young gentleman's trouble, he was to be dignified with but one title,—having examined him on natural history in a museum, on chemistry in a laboratory, and on anatomy and medicine in a dissecting room and a hospital. By the adoption of these principles in the founding of colleges, and the conducting the education of their numbers, the monopolies, contradictions, and jealousies of selfish societies were to be removed; the absurdity of the public being compelled to maintain two sets of practitioners for the treatment of one disease would cease; and the inconsistency of Army Boards requiring no less than three or four grades of doctors be prevented, as if the life of a grenadier was not of equal value to himself and his "Majesty" as that of a marine—in 1820 as in 1825. Proceeding in the same line of revolutionary exposition, you launched into an eulogium on the excellence of your design, and the doors of hospitals seemed to fly open at the sound of your voice—libraries and museums to deliver up their *dead*—the frauds committed under the guise of apprenticeships to disappear—the thousand other inconveniences and expenses by which the student is embarrassed to vanish, and the profession of medicine assumed, for the moment, in your mind, that consistency of character, equality of rank amongst its members, tendency to progressive improvement, and susceptibility of adaptation to all the wants and wishes of society, which ought to belong to the most necessary of all the arts cultivated by man.

The complacent elevation of the eyes with which a "builder of castles in the air" may be supposed to contemplate the fabrics of his own fancy, may serve to give some idea of my appearance on hearing this announcement. For, notwithstanding the animated and eloquent manner in which you delivered your scheme of regeneration, I could not help suspecting at the instant that it partook as much of fiction as of fact, and was but another effusion of that unusual benevolence of which you had given so many proofs in your incursions on the "Juggernaut" of medical corruption. Yet, on reflection, the simplicity of your arrangement, contrasted with the intricacies of that which it was intended to supersede, filled my mind with that pleasure which one is apt to feel on beholding a Grecian structure, after being bewildered in the endless grainings and tracings of Gothic architecture. I almost became an Utopian convert at the prospect of so many advantages being secured, and so many ills avoided, by such facile means, more particularly when I applied this new scale of economy to the University of Edinburgh, which you were pleased to select as a model of the old school. Considering its pretensions, and dismissing for the time all prejudices, I began to think that the mapping out of medicine into ten territories, the exact number cultivated in my favourite University, savoured very strongly of a *reductio ad absurdum* of Adam Smith's division of labour. Could a student of ever such extensive capacity imbibe in four years the flood of knowledge poured into him by these ten great reservoirs? was a question which an acquaintance with many pupils who appeared to have been drowned in the experiment, naturally suggested. The unerring certainty, too, with which many of my earlier companions returned, labelled like an apothecary's empty phial, with certain hieroglyphics attached to their names, rushed on my recollection, and excited some strange doubts about the mode of analysing a candidate's qualifications for such sacred credentials.[2]

[1] The "eminent physician of our village" who prejudiced "Scotus" when young in favour of Edinburgh University.

[2] Excerpt from letter from "Scotus" to The Editor of THE LANCET dated Edinburgh, Nov. 10th, 1826, and headed "Sketches of the Medical Schools of Scotland. No. 1."

ROYAL ALBERT HOSPITAL, DEVONPORT.—On Nov. 14th the working-men's committee forwarded a cheque for £171 to the Royal Albert Hospital, being the result of their efforts on behalf of the institution during the past 12 months.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 26, 1904.

The Session of the General Medical Council.

THE eightieth session of the General Medical Council was opened on Tuesday last by an address from the President. This is the usual form, but, as will be seen by his speech which appears in our report of the sessional meeting, Sir WILLIAM TURNER had on this occasion an announcement of particular importance to make. We regret to say that he finds it impossible to continue in office. The labours attached to the presidency of the General Medical Council, always heavy, have of late years grown heavier as the work of the Council has become larger and in many directions more practical. At the present moment a greater number of the constituency whose interests lie in the hands of the Council make communications to that body and many of these have to be dealt with by the President himself. The increase that is thus implied in personal responsibility and private labour has become so considerable that Sir WILLIAM TURNER finds himself unable to comply longer with the demands made upon him taking into consideration that he holds also the dignified post of Principal of the University of Edinburgh. He retires from the chair at the end of this session, having filled it for six years in a manner that can be briefly summed up as admirable. He has been business-like, firm, and courteous. He has promoted good feeling among a group of gentlemen whose opinions for one reason or another have a tendency to run in adverse directions and wherever possible he has saved the Council's time and money. The Council will be fortunate if so strong and yet so sympathetic a man is secured as his successor, while the medical profession will share our feeling that a debt is owing to Sir WILLIAM TURNER for his conduct of the Presidential office.

Apart from the regrettable retirement of Sir WILLIAM TURNER the programme of business which lies before the General Medical Council this session contains three matters of particular importance. To the first, the ridiculous situation which is reached by the fact that companies registered for the specific purpose of carrying on medical and dental practice appear to possess a legal medical status, we propose at this moment to make no further reference. Laughter is the proper comment, but this position, though Gilbertian, is too serious to be treated thus. The second important matter before the Council is a communication from the Army Council with reference to a memorandum received by that council from Professor HOWARD MARSH, professor of surgery in the University of Cambridge. Professor MARSH has recently addressed the War Office in respect of the examination of candidates for the Indian Medical Service, the gist of his communication being that the candidates have no practical knowledge of operative surgery because they have never had an opportunity of doing the operations on the cadaver. He pointed out that while on the one hand a supply of subjects upon which the candidates can learn operative surgery is steadily falling, on the other the demand has considerably increased owing to the great development that has taken place in operative surgery. This development has followed primarily upon the discoveries of Lord LISTER and, secondly, upon the wonderful technical dexterity that has been acquired by many leaders of the medical profession whose names will occur immediately to our readers and who are desirous, if only opportunity be given them, of training their pupils to follow in their steps. The War Office having sent Professor MARSH'S memorandum to the General Medical Council for an expression of opinion Sir VICTOR HORSLEY gave notice of a motion that a committee be appointed to inquire into the provisions of the Anatomy Act and other statutes upon the teaching of anatomy and of practical or operative surgery. The committee was appointed on the first day of the session and its report will be looked for with curiosity. The deficiency in subjects for anatomical and operative purposes has been felt by other authorities than those of the Cambridge Medical School, and it is indeed sad that, at a time when the chief modification in the treatment of large groups of disease consists in the advancement of operative surgery, the means of teaching this subject in our medical schools has become more restricted. It might have been expected that as the world grows wiser competition to give every medical school the fullest possible chance of educating its students thoroughly would take place among the public. This, however, is not the case. It is an unfortunate fact, which must be faced by all having the interests of the art and science of healing in their charge, that the public does not understand what is meant by medical education.

The third motion which may lead to a valuable discussion—though it is a subject upon which before now much time and breath have been spent with little result—has been set down by Dr. J. LINDSAY STEVEN. It has reference to the requirements now made by the General Medical Council in the student's medical curriculum and while it assumes that that curriculum is overloaded, and to some extent wrongly arranged, it proposes remedies for these conditions. In 1893 physics, chemistry, and biology were included in the curriculum, while a written, oral, and practical examination in each subject was made obligatory some ten years later. As a result, the work that is imposed upon students in the earlier part of the curriculum, says Dr. LINDSAY STEVEN in his motion, is increased to such an extent that many of them do not pass the examinations in physics, chemistry, and biology before beginning the special medical portions of the curriculum. This implies that the subjects theoretically designed to occupy the student's fourth year are still being acquired in his fifth year and that the object of the Council in adding a fifth year to the curriculum to be employed solely in clinical and practical work has not in many instances been attained. Dr. LINDSAY STEVEN would have the Council deal with the dilemma at one end or the other of the student's career,

either by not permitting him to count his time as a student of anatomy and physiology until he has passed his examination in preliminary scientific studies or by not permitting him to enter for the final examination without furnishing proof of a year's exclusive devotion to clinical and practical work. We are not certain that the Council will find it feasible to make either suggestion into a hard and fast regulation but the medical profession will learn with interest the views of the Council.

Social Evolution and Public Health.

THE address with this title which appeared in a recent issue of THE LANCET[1] deals with matters of great importance to the community at large in the clear and scientific manner that might be expected of a man speaking with the experience and the learning possessed by Dr. ARTHUR NEWSHOLME. It forms, in fact, a sermon that can with benefit be perused and carefully assimilated by readers of every kind and for this reason we return briefly to its consideration. The lessons conveyed by Dr. NEWSHOLME'S logical conclusions are such as ought to be learned and acted upon to the extent within his power by every good citizen. Medical men, however, more than most others, are in a position to act up to Dr. NEWSHOLME'S precepts and it is encouraging to read his good opinion of the work that is being done with regard to public health by the medical profession in general and by medical officers of health in particular. "The present direction of public health legislation and administration has been reached by inquiry and study without stint. ..... With certain reservations it may fairly be said that progress along the present line is the best thing that can happen." A great social development of which one of its practical exponents can, after extended trial, say so much is in a happy plight.

Dr. NEWSHOLME, however, is very far from resting satisfied with present conditions and the conclusion of his address shows how fully he realises the necessity of continued and constant work if the general welfare, as regards both health and wealth, is to be enhanced considerably and lastingly. The improved death-rate and the decrease on the whole of poverty are encouraging evidences of the value to the community at large of the scientific spirit which has pervaded medical affairs during the last 50 years. And it is in a spirit eminently scientific that Dr. NEWSHOLME analyses the causes and effects relative to the public health. The health of communities, he says, can be discussed in the same terms as the health of individuals. In the case of individuals we are accustomed to the application of the Darwinian doctrine of the survival of the fittest: and the measure of the fitness for an individual to survive is the ratio of his capacity to the strain imposed upon him by his environment. The public health of a community, Dr. NEWSHOLME implies, is a function of this same ratio. Public health policy is directed towards increasing the fitness of the individuals composing a community and removing or diminishing the excessive strain imposed upon them by environment. The first question to consider, obviously, is how far the fitness of an individual is capable of modification, taking into calculation certain innate qualities of old standing in the race to which an individual belongs, which Dr. NEWSHOLME regards as permanent during the life of such an individual irrespectively of his environment. Most important in the question of controlling individual fitness is the matter of education, education being taken to denote a far wider sphere of influence than is generally included within the term. Education from the point of view of public health must aim at nothing less than the creation of national habits of hygiene. The formation of character is the true aim of education and in public health character means habits of cleanly, sanitary, and simple living. We will take for example only one point in the life of a community, and a most obvious point it is. We have only to think of what is implied in our food-supply to realise how vast is the influence upon national prosperity of a general acquisition of good hygienic habits. Granted that a percentage of the community has not enough food there is a much larger percentage in whose case the amount wasted by uneconomical choice of food or by non-assimilation of assimilable food far outweighs the deficiency in food-supply. To choose food, and to use with skill cheap and savoury means of cooking it, do not come by the light of nature. The national training of girls to the execution of these duties would be to raise at once the national hygiene. Women certainly, if not their natural partners and supporters, should be taught the correct and economical selection and use of foods. The formation of habits of this kind, whether in matters of food, of exercise, of clothing, or of domestic environment—these are the habits in inculcating which education would have so wide and beneficial an effect upon the national health and welfare.

Dr. NEWSHOLME strikes another true note in his interpretation of the interdependence of poverty and ill-health. His views on the way in which relief should be afforded to those who require help in their physical or their pecuniary poverty seem to us perfectly rational, well considered, and correct. It is indispensable, he shows, that the help which the State gives should be sufficient, that is to say that he stigmatises outdoor relief for the most part as unsound and sentimental—sentimental because it soothes the sentiment of the giver rather than satisfies the needs of the receiver; unsound because, so far from affording a remedy, outdoor relief protracts the disease by keeping the patient in his insanitary and overcrowded dwelling. Charity to be effective ought to stimulate the self-help on which the individual must rely to raise himself above the poverty line. Its function is to assist him to shape his own environment rather than to shape it for him. We are perfectly aware that, things being as they are, outdoor relief cannot be dispensed with, and is in many instances of the first value to its recipient, but those who look forward to the day when the community will be well informed upon large sanitary questions see that outdoor relief will have no place in an enlightened scheme of public health.

[1] THE LANCET, Nov. 12th, p. 1330, et seq.

The Treatment of Enteric Fever.

IN delivering the Bradshaw Lecture of 1904 at the Royal College of Physicians of London Dr. F. FOORD CAIGER chose a subject which will prove of interest to all practitioners of medicine. The case mortality of enteric fever in this country is still as high as 15 per cent. and in each year between 5000 and 6000 persons die from the disease. A *résumé* of the treatment of so prevalent a malady by a physician who has had such a large experience as Dr. CAIGER combined with his own personal impressions cannot fail to be of considerable practical value. We only intend to draw attention to some of the more prominent points in Dr. CAIGER'S admirable lecture but would recommend to our readers a careful perusal of the full text which is published in the present issue of THE LANCET. The remarks on the "specific treatment" of enteric fever will naturally be read with interest. The remarkable success which has attended the treatment of diphtheria by the injection of antitoxic serum and the artificial immunity against small-pox conferred by vaccination have not unnaturally encouraged the hope that similar results might be attained in the case of enteric fever. Unfortunately, such favourable anticipations have not yet been realised. Professor CHANTEMESSE has produced a serum with which a remarkable success in the treatment of the disease is said to have been achieved. As to the nature of this serum there is at present some uncertainty and Dr. CAIGER remarks that any inference as to the efficacy of the serum is unfortunately weakened by the fact that various other remedies, such as baths, packs, and cold effusions, were used in addition to serum-therapy whenever their employment appeared to be indicated. Dr. A. E. WRIGHT'S method of antityphoid inoculation is also carefully criticised. The success attendant on this process has been a source of considerable difference of opinion amongst those who have had practical experience of its use. Dr. CAIGER refers to the inquiry undertaken by the Royal College of Physicians of London. He expresses the opinion that the further investigations now being made with the object of effecting an improvement in the vaccine and of extending the knowledge already accumulated as to the best and most appropriate dosage will be productive of better issues than have hitherto been reached. We also believe that the results obtained during the South African war and in various parts of the Indian empire warrant a further trial of the vaccine and that Dr. CAIGER'S hopes will be fully realised.

Turning to the treatment of typhoid fever as commented on in this lecture we find many interesting and instructive remarks. Dr. CAIGER is a firm believer in the cold-bath treatment when properly carried out and adduces a large amount of evidence, in addition to his own experience, in support of this therapeutic measure. He expresses himself in no doubtful terms on this point and the large majority of physicians who have had charge of hospital wards will, we think, agree with him. He maintains that in view of the remarkable success which has been achieved abroad with this form of treatment those in charge of hospital patients suffering from typhoid fever incur some responsibility in withholding its use. The method is unfortunately attended with certain difficulties which occur more particularly in private houses. If, however, the extreme desirability of entering upon this line of treatment be explained to the patient and his relatives we believe that the baths will meet with more favour than Dr. CAIGER anticipates.

The observations on the various drugs which are employed in the treatment of this disease are also of considerable value. Numerous remedies of the antiseptic class have been advocated and the lecturer observes that during the last 15 years he has tried most of these remedies but in the majority of instances he has been disappointed with their action. He refers with some confidence, however, to a few drugs, notably the essential oil of cinnamon. The favourable effects attending its administration are:—(1) the temperature in the majority of cases ran at a lower level than is customary in enteric fever, especially in cases brought under treatment in a comparatively early stage; (2) the patients remained for the most part drowsy throughout their illness and as a result mental rest was secured and delirium was less frequent; and (3) intra-intestinal decomposition was controlled to an extent which was very striking. The symptomatic treatment of typhoid fever also receives due attention. The management of hyperpyrexia, sleeplessness, delirium, diarrhœa (or the converse, constipation), abdominal pain, and cardiac collapse frequently presents great difficulties and any one of these may add considerably to the difficulties and danger of the case. Great stress is laid on the importance of securing mental rest for the victim of enteric fever and we agree with Dr. CAIGER that in some cases it is no exaggeration to say that treatment of the mind is the most cogent indication throughout. The administration of opium is often of great value when mental symptoms are prominent; the drug is best given in the form of the tincture, five or six minims being taken every four hours. Finally, Dr. CAIGER considers the occurrence of hæmorrhage and perforation of the intestine. With regard to the latter complication he declares himself strongly in favour of operation and is in complete agreement with those who hold that a moribund condition of the patient should be the only contra-indication. He further urges that the operation should be performed as soon as possible after the perforation has occurred. The accumulated experience of the last few years has clearly shown that if surgical treatment be postponed until reaction has set in not only may the chance of a favourable issue be allowed to slip but the opportunity for operation also. Dr. CAIGER is to be congratulated on having delivered a lecture full of valuable information. He deals with the treatment of a disease which is rarely absent from the medical wards of the hospitals in large towns and which occasionally spreads disaster in the form of extensive epidemics. Prophylactic measures are, of course, to be carried out as thoroughly as possible but curative treatment also is at present indispensable, and the Bradshaw Lecture of this year will for a long time stand out as one of the best dissertations on the treatment of typhoid fever which medical literature possesses.

Annotations.

"Ne quid nimis."

AMBULANCE DOGS IN WARFARE.

SOME interesting experiments were tried upon Wimbledon Common on Saturday last with dogs trained by Major Hautdeville Richardson for ambulance purposes. The idea of using dogs for this purpose takes its origin from the dogs trained by the monks of St. Bernard for finding bodies lost in the snow. The St. Bernard breed of dog is, however, too large and not swift enough for use in war and the same remark applies to blood-hounds. These dogs, moreover, hunt by smell, whereas the sheep-dog or collie is said to hunt by intelligence or with its brains and not by smell, the cross-bred dog showing even greater intelligence in this respect than the thoroughbred. The use of dogs for war purposes has been tried by the German army and some 200 dogs formed part of the Herero expedition. Major Richardson has sent some trained dogs to Russia for use in the present war and these are said to have given satisfaction, and Italy, Austria, and Switzerland are also trying the experiment which may be said to be still *sub judice*. The experiments which took place on Saturday last were intended to demonstrate the use of dogs in locating the wounded in the open and under cover, neither of which they did unassisted, and in carrying succour to the wounded when found in the shape of bandages and brandy. For the purpose of the experiments only two dogs were employed, the one a cross between a collie and an Esquimaux and the other a cross between a retriever and a collie, the former being if anything the better of the two at its work. Each dog was provided with a waterproof canvas saddle with the Red Cross painted upon each side, which contained eight bandages for the wounded, a wooden barrel of brandy was suspended below the neck, a small waterproof sheet was attached to the neck of the animal as was a bell for night use. With regard to the experiments their success on Wimbledon Common was only partial. Many of the "wounded" lying in the open were plainly visible to the onlookers and yet the dogs, after being released from the leash with the order, "Seek wounded," went gaily barking past the wounded in their glad release, while in finding persons located under cover they had to be assisted by Major Richardson. The verdict of those present at these experiments was that the result was anything but conclusive. It must in justice to Major Richardson and his dogs be said that they had travelled overnight from Scotland and might naturally be tired and not so keen as otherwise they might have been; but the question naturally arises, What practical value to ambulance work will dogs be even if the system is properly and more efficiently developed? That dogs with the aid of hospital orderlies would be of assistance in locating stricken people on distant parts of a battlefield is perfectly true, but that a dog unaccompanied would discriminate between one actually dead and those in need of relief is quite another thing. Again, those in need of relief are generally beyond the power of helping themselves to the relief which the dog might bring them, and to those who are not injured so seriously as to be unable to help themselves the bandages would be of no more use than those already supplied in the antiseptic first aid dressing to be found sewn in the skirt of every soldier's tunic when proceding to the front. This, as we know, in South Africa largely helped to the keeping clean and quick healing of wounds by its immediate application by the wounded soldier himself. The brandy carried by the ambulance dog would certainly be at the disposal of the wounded, but it is questionable whether it would be beneficial to him or not, especially if his wound was attended with hæmorrhage. As water-carriers or as bearers of ammunition dogs might certainly prove of use. Dogs, as is very well known, will attach themselves to regiments and would undoubtedly either by instinct or smell go to men belonging to that regiment and thus carry them assistance. Whether they recognise uniform or are guided by smell or intelligence, or both, it is impossible to say. Smell has probably most to do with the power of a dog to locate the wounded. The giant of story said—

> "I smell the blood of an Englishman,
> Be he alive or be he dead"—

but we are not told that he could further decide whether our countryman was still with us or was gone before. The ambulance dog would be in the same plight. The power of discriminating between the live and the dead would be impossible and the ambulance dog is quite as likely to remain by the side of the dead man as by the side of the living. By the smell of blood is not meant the smell of actual blood, for in the case of a wounded man this might or might not be present. But the smell of an Englishman is probably as perfectly clear to a dog's keen sense of smell as the smell of a Kaffir is equally distinct to us. It is very probable that the benefit to be derived from ambulance dogs in warfare is not worth the expense of £25 per dog which is said to be the commercial value of one of these trained dogs, and we think that the British War Office for the present is quite right in awaiting further evidence of their usefulness.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

IT is to be regretted that it should have been necessary for the Chairman of the Executive Committee of King Edward's Hospital Fund for London, Mr. H. C. Smith, to appeal, almost at the eleventh hour, for the sum required to enable the Fund to accept the offer of a generous but anonymous donor. Our readers will remember that in the spring the Prince of Wales announced that an anonymous donor had offered to place at the disposal of the Fund an amount which would produce an income of £4600 per annum on condition that by Dec. 31st a further sum was collected which would produce an income of £9400. The object of this offer is to raise the permanent income of the Fund to £50,000 with the view to an annual distribution of £150,000. Last year the Fund had to withdraw £18,750 from capital in order that £100,000 might be distributed among the various hospitals. It is felt that it would be unwise again to reduce the capital of the Fund, so that only £80,000 will be available at the forthcoming distribution. This sum is inadequate for the pressing needs of the hospitals and it would be a calamity indeed if the administrators of the Fund found themselves unable to accept the generous offer of the anonymous donor. The strain upon the purse of charity has been, and is likely to be, for some time to come very great but the welfare of the sick and suffering poor must demand our first consideration, whether regarded from the point of view of moral duty or the selfish one of general utility. If voluntary effort proves to be inadequate for the purpose the hospitals will have to come upon the rates for support—an alternative which few who have given any attention to the question will accept with anything but misgiving. We much deplore the fact that the required sum has not already been forthcoming, more especially as at the annual meeting of the Fund in March last, when the Prince of Wales read the anonymous donor's letter, His Royal Highness said how reluctant he

was to make personal appeals. In the case of the present munificent offer, however, he felt it his duty to invoke the support of those who were able to follow in the footsteps of the unknown benefactor. We sincerely hope that it will be our duty to announce before the close of the year that the needed sum has been subscribed.

GAS v. ELECTRICITY.

IT is exactly 11 years ago that the following sentence appeared in the Report of THE LANCET Special Analytical Sanitary Commission on Gaseous Fuel, Gas Heating, and Gas Cooking Appliances: "The incandescent burner with recent improvements is rapidly growing in favour and we feel confident that this form of burner promises to play a very important part in the future and in any case it is certain that there is still plenty of room for improvement in the methods of using gas as an illuminating agent." The report referred to was written at a time when everybody confidently expected that the electric light would supersede entirely the use of gas for lighting purposes and there is little doubt that this expectation would have been realised if to this day what was at one time a rare element, thorium, had not been discovered and the incandescent mantle, which is largely composed of it, had not been invented. If the modern householder's only recourse nowadays was to use a naked gas flame with its attendant disadvantages of waste of gas, feeble illuminating power, and contamination of the air, he would not hesitate to decide in favour of electricity for lighting purposes. The incandescent mantle has, in fact, saved the gas industry and not only saved it but placed it in such a position that gas lighting by modern methods of high pressure incandescence, inverted burners, and so forth, threatens to outstrip electricity for general lighting purposes. This is no exaggeration when we reflect that invariably the finest streets in the great cities of Europe are now lighted with incandescent gas burners, and if the high-pressure incandescent lamps be compared with the electric arc lights at some of the busy street crossings in London there can be no question of the great superiority of the incandescent gas system. In fact, in several places the electric arc lights may as well not be in use in the face of the brilliant penetrating light of the incandescent mantle. This week at a gas exhibition held in the exhibition buildings at Earl's Court may be seen incandescent gas burners working under pressure with the light of which the electric arc light cannot compete for brilliancy, steadiness, penetrating power, or tone. Nor is it on the large scale alone that gas is seriously rivalling electricity. The inverted incandescent gas burner is hardly distinguishable in appearance from the incandescent electric light in the artistic lighting of domestic rooms. It gives a more brilliant light, consumes a surprisingly small quantity of gas, and the lamp may be decorated in the same way as the electric lamp. The incandescent mantle, while it has considerably cheapened the cost of gas to the consumer, has enormously increased the lighting power of the gas, and these are advantages which serve as a set-off to the undeniable convenience of the electric light, its cleanliness, and its absolutely negative effect upon the purity of the air. As a source of lighting power gas is certainly cheaper than the electric light now that the thorium mantle extracts so much lighting duty from it. We may, however, look confidently to important improvements being effected in electric lighting analogous to those which have been made with gas and the great advances made in gas lighting are calculated to serve as a strong stimulus to this end. After all no very substantial improvement has been made in the systems of electric lighting during the past ten years. We still have the flickering and buzzy arc light and the carbon filament in the incandescent lamp invented by Swan many years ago. There is, however, an exception in the excellent Nernst electric lamp in which, oddly enough, the filament consists of much the same material as the mantle of the gas incandescent lamp. Bound as we are to admit the great convenience, cleanliness, comparative coolness, and harmlessness of the incandescent electric light it is far from being a perfect method of illumination. For some not very clear reason the light of the incandescent electric lamp seems to be wearying, taxing the muscles of accommodation of the eye, and a good many people complain that reading by the electric lamp gives rise to headache. Possibly the fact that the light is rich in red rays, especially when the lamp is not burning with full efficiency, may have something to do with it or perhaps the distribution of the light from a loop instead of a fixed centre may have some disturbing effect upon the eyes. The pioneers of gas lighting have had a strong incentive in the growth of electric lighting to improve their system and now it would seem that it is the turn of our electric-lighting engineers to bestir themselves, to introduce similar practical improvements, and to make similar brilliant advances to those which their competitors have made or be left behind in the race.

THE FOOD OF THE JAPANESE SOLDIER IN CONNEXION WITH BERI-BERI.

A LETTER from Tokio published in the *Gazette de Cologne* gives some interesting details regarding the food of the Japanese soldier at home and on active service. For some considerable time the daily ration has differed greatly from what it was formerly. It has been semi-Europeanised with a view to increase the physical strength of the fighting man. Plain rice is now seldom issued, the usual practice at present being to mix wheat with it, experience having shown that a diet of rice alone predisposes the men, especially in summer, to kakké or beri-beri. In addition to the wheat fish and meat are also issued at times. The morning meal of the modern Japanese soldier consists of a porridge of rice and wheat, together with haricot broth and a vegetable preserved with salt. For his midday meal he receives fish or boiled meat, rice with wheat, and cooked vegetables. The evening meal is similar to this. In addition the soldiers all purchase bread at the canteen. It is white bread and they call it "pan." Brown or black bread they call "kuropan" and reserve it for strangers. The canteens also supply a kind of sweet biscuit called "katapan," each biscuit being of about the size of the palm of the hand and as thick as a little finger. The ration of the soldier thus constituted is far superior to the ordinary Japanese food of civil life. On active service the soldier carries dry rice and slightly salted prunes in his haversack and is also provided with a hollow bamboo to contain water. The company wagon provides him with dried and compressed vegetables, dried fish, preserved meat, and "chojou" (a highly concentrated fluid extract of haricot beans), together with rice spirit and cigarettes in small quantities. The Japanese military authorities have recently sanctioned a *batterie de cuisine* for each soldier. The composition of the material from which these utensils are made is kept a secret but it is supposed to be compressed paper rendered fireproof by chemical means. Each man carries his equipment in his haversack. Commenting on the foregoing a writer in the *Archives de Medecine et de Pharmacie Militaires* for November gives it as his opinion that the "chojou" is not so much an article of diet as a prophylactic against kakké or beri-beri, in the same way that lime-juice is employed as a preventive in scurvy and orange-juice with potato soup in Barlow's disease. From time immemorial the haricot bean as well as wheat, both of which are rich in nitrogen, have been

esteemed as the best preventive of, and also the most efficacious remedy against, beri-beri throughout China and Japan. It is true that the opinion of Takagi that beri-beri is caused by an exclusive rice diet is no longer upheld but many observers are satisfied that the lack of nitrogenous material in food is apt to bring about a condition of the system which diminishes its power to resist the disease. On the other hand, Ishiguro, the well-known Japanese military surgeon, denies that beri-beri is influenced by food. Too much rice does not cause it, neither is too little nitrogen in its favour, while the increased consumption of meat in Japan has coincided with an augmentation of the disease. Accurate statistics are not as yet forthcoming but there is little doubt that since the outbreak of the present war kakké has committed serious ravages amongst the Japanese troops. Damp and cold undoubtedly favour it but although Ishiguro thought that an out-of-door life during manœuvres lessened the number of cases it seems certain that kakké is one of the diseases which attends on crowded camps, especially when these are hygienically defective. Before concluding his remarks the writer in the *Archives* (Surgeon-Major J. Simonin) says that the Japanese soldier has of his own initiative solved the great question of white bread *v.* brown bread, a question which is still in suspense throughout the armies of Europe. The Japanese is careful to eat the white bread himself and reserves the "kuropan" for his friends. If we are to judge by the "furia" which he exhibits in action, it does not look as if his physical energies were one whit lessened in consequence. The fact that white bread alone is purchased in the canteens plainly indicates the course which should be followed. Surgeon-Major Arnould states in the *Archiv für Hygiene*, Band xlv., 1902, that Serafini of Padua and Lehmann of Würzburg have conducted a series of experiments which proved to be totally unfavourable to brown bread made from unbolted flour. There is little reason to suppose, says Lehmann, that soldiers will ever be induced to consume with benefit a bread containing a large proportion of bran. As Inspector-General Chauvel judiciously observes, chemistry may make it appear that white bread is less nourishing than brown but its physical structure is better adapted for absorbing the digestive juices and it consequently is more easily absorbed and therefore proves in the end to be more and not less nourishing. In conclusion Surgeon-Major Simonin hopes to see introduced into the European soldier's ration the Japanese "pan" and also his "katapan" with its sugar, that aliment of the first order for imparting energy. There is need to supplement the nutritive deficiencies of bread made from flour in which bolting has been carried to excess for the sake of improving the colour. As for the "chojou," although it may not be an absolute panacea against beri-beri, it is nevertheless a useful article of food thanks to its proteids as well as to its carbohydrates which are directly utilisable by the organism for the production of heat and mechanical vigour, two things by no means to be despised on active service.

THE PROVISION OF SANATORIUMS FOR TUBERCULOUS PATIENTS.

IN presenting the annual health report for 1903 to the county council of East Sussex, Mr. A. G. R. Foulerton, the medical officer of health of that district, offers some interesting observations on the Provision of Sanatoriums by the Public Sanitary Authorities for Phthisical Patients. Some authorities have insisted that the isolation of tuberculous patients in sanatoriums is one of the essential points in attempting to stamp out the disease. Mr. Foulerton strongly protests against such a measure. He suggests that those who have advocated this principle have made the old mistake of dealing with the more apparent effects of an evil instead of striking at its cause. He maintains that the general provision of sanatoriums by the public sanitary authorities for the isolation of cases of pulmonary tuberculosis occurring amongst what are termed the working classes would not merely be unsound from the scientific point of view but would also be unsound economically. He has great doubts whether the resulting public benefit would be in any way commensurate with the necessarily large expenditure of public money. It will be observed that Mr. Foulerton is only expressing his views on the value of sanatoriums as agents in assisting to stamp out the disease. He does not question the value of sanatorium treatment for individual cases of pulmonary tuberculosis but contends that as a large preventive measure against the disease, to be carried out at great expense by the public sanitary authorities, the method is one which under existing conditions is foredoomed to failure. He proceeds to point out that pulmonary tuberculosis is in the main a disease of the unhealthy home and of the overcrowded and ill-ventilated workshop and factory. He urges that what is chiefly needed to cause a decrease in the mortality of the disease is a more vigorous exercise of the provisions of the Public Health Acts. This would enable the sanitary authorities to deal with most of the evils arising from overcrowding and insanitary conditions of the dwelling house and factory. We trust that Mr. Foulerton's remarks in regard to these Acts will receive the attention which they deserve. We believe that by proceeding in the manner he proposes much more would be done to lessen the occurrence of pulmonary tuberculosis than by any plan of enforced or voluntary notification.

PROFESSIONAL SECRECY.

A CASE which was heard in Edinburgh last week once more raises the question as to whether, and how far, a medical practitioner is entitled to claim privilege from disclosing matters which take place between him and his patients in the consulting room. In an old Scottish case (A.B. *v.* C.D., (1851) 14 D. 177) the court held that secrecy was an essential condition of the contract between a medical man and his employer, and that breach of this secrecy affords ground for an action for damages. There are, however, some conditions under which a practitioner may be compelled to publish communications made to him by his patients. He may be called upon to do so in the witness-box; and, of course, he is absolutely privileged in respect of anything which he may then reveal. Thus, in the Duchess of Kingston's case Lord Mansfield said: "A surgeon has no privilege, where it is a material question in a civil or a criminal cause to know whether parties were married, or whether a child was born, to say that his introduction to the parties was in the course of his profession, and in that way he came to the knowledge of it. If a surgeon was voluntarily to reveal these secrets, to be sure he would be guilty of a breach of honour and of great indiscretion; but to give that information in a court of justice, which by the law he is bound to do, will never be imputed to him as any indiscretion whatever." In a later case, where a prisoner was indicted for the murder of her child, a surgeon was called to prove a confession made to him. Upon his objecting on the ground that he would be disclosing the secrets of the consulting room Baron Park said that in his opinion this constituted no sufficient reason to prevent a disclosure for the purposes of justice. It is to be noticed, moreover, that the obligation to give evidence applies, although the communication is expressed to have been made in confidence. So, in Lee *v.* Hammerton it was decided that the confidential report of a medical man to an assurance company may be inspected by the defendant

in an action when it is required as evidence. The foregoing cases make it plain that a medical man may not refuse to disclose his patients' confidences. If he does so refuse on the grounds of medical etiquette the consequences may be serious for him. In a case which was heard in Scotland in 1896, the plaintiff, a surgeon, was insured against blood poisoning resulting from accident which was "capable of direct proof." It appeared that he cut his finger while operating on a patient, in four days his finger became inflamed, and shortly after that the sore assumed the characteristics of a primary syphilitic sore. At a later date secondary symptoms were apparent. The place of inoculation was the wound. This much was proved by the surgeon in an action brought upon the policy. He stated in his evidence that when he first operated he had no suspicion that the patient had syphilis but that since, and from reasons apart from his own condition, he was now of opinion that she was suffering from that complaint at that time. He refused to disclose the patient's name, alleging that to do so would be to commit a breach of etiquette and he did not examine (i.e., call as a witness) another medical man who, he said, had previously attended the patient and knew that she had suffered from syphilis. It was decided that the plaintiff had failed to prove that the patient was in a condition to inoculate him. Had he been able to refuse to disclose the patient's name on the ground of privilege it is possible that the court would have been satisfied by his own statement to the effect that he had acquired the disease in the manner described.

SUBSTITUTION IN THE MEAT TRADE.

WE appeal for a law which shall enable the public to purchase what they ask for. There hardly appears to be a trade left now which does not, more or less, resort to the practice of substitution, by which the public are systematically and deliberately humbugged. The classic example is the milk trade, the simple expedient of which was to supply milk and water as pure milk. On a par with this is the selling of a mixture of coffee and chicory as genuine coffee, a mixture of starch and cocoa as genuine cocoa, a mixture of foreign fat and butter as genuine butter, a mixture of grape spirit and silent spirit as genuine brandy, a mixture of linen and cotton as genuine linen, and so on *ad nauseam*. The practice is not limited to any particular trade, it is general. The same excuse for this humbugging game is invariably tendered, that is, that the substitute is far better for the consumer's well-being and health than the genuine article, but unfortunately it happens also invariably that while the substituted article "is of better value" it is much cheaper and gives the seller a wider margin of profit than if he sold the genuine article. In the meat trade we are told that American meat is better than English meat, although the butcher seems glad to qualify it by such terms as "British killed," "killed in England," and "home killed," which in reality only mean that it is not imported frozen but alive. Then again much frozen lamb is sold as "best English fresh" and it is a fact that the proprietors of hotels and restaurants are big dealers in frozen meat. We have nothing to say against frozen meat; on the contrary, we believe it to be perfectly wholesome when the refrigeration and the thawing have been done properly. There is no reason why sound frozen meat should not be good food and to the poor the supply of frozen meat must be a boon. But all this does not justify in the slightest degree misrepresentation. The man who asks for British home-fed meat ought to get it. The meat of ill-fed cattle, fatigued by a long journey by sea or by land, and killed as soon as they land, cannot be as wholesome, tender, or nourishing as that of the cattle reared in this country and killed within a few hours of their being taken from the home pasturage. It is well known that fatigue products in flesh may give rise to poisonous symptoms in those who partake of it. Liebig mentioned a case in which the flesh of a roebuck which had been severely hunted gave rise to symptoms of poisoning in those who made a meal of it. Again, fatal results ensued when pigs were fed upon the flesh of a horse which had died during its struggles when being broken in. The suggestion has been made—and we think it an excellent one—that all those retailing foreign meat should take out a licence in the same way as does a dealer in game, while the butcher who sells exclusively British meat should be freed from such a tax. The great advantage of this arrangement would be to bring the sale of both foreign and home meat under the supervision of our food inspectors. We sadly want legislation which will guarantee to the public that the things sold to them are what they seem.

REVIVALISM IN WALES.

IT is not our custom to touch in these pages upon religious questions but no consideration of this kind need, we feel, debar us from commenting upon the curious psychological phenomena at present being exhibited in South Wales in connexion with the religious upheaval which is in progress there. A clergyman, himself professedly in sympathy with the movement, describes it in these terms: "It belongs to the class of revivals that were often witnessed half a century ago, the chief characteristic being an irresistible desire to praise the Lord in a demonstrative manner." This description, if the details which can be gathered from the *Western Mail* are to be accepted, certainly does not err on the side of exaggeration. In the number of that paper dated Nov. 19th several columns are devoted to accounts of the scenes of disorder which have marked the peregrinations of the chief missioner. We read of meetings prolonged well into the early hours of the morning; of dramatic conversions accompanied by scenes of wild excitement; of "agonising piteous appeals"; of women "taken out in a state of collapse"; of strong men sobbing and "bearing testimony in quivering, broken accents" and incidentally neglecting to follow their usual occupations; of, in short, a debauch of emotionalism which may well raise doubts as to the stability of the Celtic temperament. And as to the chief instigator of this tumult what is to be said? The *Western Mail* contains what purports to be an interview with him and from this we extract the following particulars: "His restlessness is marvellous, he is walking about all day with the springiness of a man treading on wires, his arms swaying unceasingly." During a period of about 48 hours, we are told, he has only had one hour's sleep. He "eats very little food." There has been a suggestion of his being animated by "magnetism," and he is quoted as saying that no watch will keep time with him. It is recorded that at one meeting he "fell prostrate and remained with his face on the floor for some time," seeming "to be in agony," while on another occasion he was "observed to be weeping like a child." He is reported to have said: "When I go out to the garden I see the devil grinning at me, but I am not afraid of him. I go into the house and when I go out again to the back I see Jesus Christ smiling at me." This is a picture which can hardly fail to excite concern on the part of the preacher's friends and if these include any medical practitioners it would be true kindliness on their part to point out to him the peril which menaces his intellectual equilibrium. Nearly 50 years ago Wales was shaken by similar hysterical outbursts initiated by one Humphrey Jones of whom it is quaintly recorded that "through some inscrutable decree

of providence" he broke down and eventually reached a lunatic asylum. It is to be hoped that the common sense of the general community in Wales will prevent such excesses as are reputed to have occurred in 1859 and that the leaders of Welsh thought will do their utmost to stem the flood of irrationality which appears to be sweeping over the land.

A WEEK'S FOG AND TS LESSONS.

ALL our cherished ideas about abatement of smoke have been somewhat shaken by the remarkable prevalence and persistence of fog in London last week. Prevention of smoke may mitigate the evil to some extent but those natural agencies which conspire to breed fog are sometimes insuperable. We have been congratulating ourselves that by the vigilance of our health authorities during the past few years the fogs of London have been less severe and it may be said that on the whole there has been less local colouring. But in spite of electric light, increased consumption of gas for heating purposes, and smoke inspectors the fog last week was as bad, as persistent, as dense, and as irritating as ever. In a large area such as London it is impossible to combat meteorological conditions. A stream of wind is the only means of salvation from fog and it is the prevalence of wind, however light, during the winter of past years which has kept London comparatively free from fog. To all of us, and especially to our health authorities, the result is disheartening but that is no reason why our efforts to suppress smoke should be relaxed. There are abundant grounds for thinking that the activity of the smoke inspector has done much good but his task is an enormous one. We have at least had the satisfaction of seeing the local output of smoke considerably reduced. Until the advance of a high atmospheric pressure which characterised the meteorological state last week we had enjoyed bright sunny weather and then it could be easily noted that, at any rate, there were few chimneys that could be regarded as seriously sullying the air. So much at least may be said for the coal smoke abatement movement. If the meteorological records of the past comparatively fog-free winters be studied it will be found that the real reason why we have been free from general fogs has been the prevalence of a relatively low pressure which in reality means that there was some wind in one direction or another. Constant high atmospheric pressure with local fluctuations of temperature as in winter are conditions which must lead to fog and our only hope is to prevent as much as possible its colouration by smoke. The possibility of dispelling fog by electrical means has been glibly discussed. The enormous area over which fog is formed renders any application of electrical energy impracticable. Taking a lesson from those meteorological conditions which on the one hand give rise to fog or on the other prevent its formation or continuance, a simpler course would appear to be to raise a draught when anticyclonic conditions prevail. The best dissipator of fog is wind, and if that wind happens to be a little warm the fog is rolled away and the particles are dissolved in the warm air. The question remains, Is it possible to sweep London with a forced draught when the need arises? Assuming, however, the practicability of such a scheme, there is sure to arise a difficulty as to which direction the wind should be made to take. If it were made to come from the south-west the inhabitants of north-east London would be badly off for a time, while if it were directed from the east the West-end would have to endure the foggy sweepings of London until the forced draught had gained the mastery. The suggestion to dispel fogs by electrical agencies, or even the proposal to alter every fireplace in London or to enforce the use of one kind of fuel would involve, we imagine, a greater undertaking than would any attempt to set up a forced draught, while the latter system would be based upon the method in which the great natural agencies effectually rid us of the intolerable evil.

A FORM OF FRACTURE OF THE RADIUS DUE TO AN ACCIDENT IN STARTING A MOTOR-CAR.

IN the *Boston Medical and Surgical Journal* of Nov. 3rd Dr. F. B. Lund has reported three cases of a form of fracture of the radius due to an accident in starting a motor-car—a condition which has been previously described by M. Lucas-Championnière who refers to it as a "professional fracture" in chauffeurs.[1] The gasolene motor-car is started by turning a handle from left to right which is connected with the fly wheel of the engine. As the handle is turned the piston descends and sucks a charge of the explosive mixture into the cylinder. The wheel continues to turn and the piston ascends and compresses the mixture until the electric spark explodes it and drives the piston downwards. If, owing to careless manipulations, the explosion takes place prematurely the wheel and handle are driven violently in the opposite direction to which they are moving, carrying the hand of the operator and not infrequently fracturing the lower end of the radius. The fracture is due to a violent twisting backward of the hand at the wrist without the impacting force usually present in the ordinary Colles's fracture. The hand is driven backwards and carries with it the articular surface of the radius, which is torn off. The line of fracture is clean and transverse. The treatment is simple and union takes place without deformity or stiffness, contrasting with Colles's fracture. The following is one of the cases reported. An experienced mechanic, aged 30 years, was starting a 15-horse power three cylinder motor-car. He "retarded the spark" by pressing down a button preparatory to turning the handle. While he moved away for a moment to answer a question a bystander raised the button and advanced the spark. The mechanic turned the handle and a "back kick" twisted his hand backward, producing a marked deformity. The anterior edge of the upper fragment of the radius almost penetrated the skin. He was taken to hospital and examined under ether and anterior and posterior splints were applied. A radiograph showed that the styloid process and articular surface of the radius had been avulsed, and that there was a vertical fracture through the middle of the articular surface. Active movement of the fingers was performed every day and every other day the splints were removed and active movement of the wrist and fingers was performed. The posterior splint was removed after ten days and the anterior after 17 days. After three weeks the patient could do light work.

PAUPERS AS NURSES.

IN the bad old days of Poor-law administration it was a generally accepted practice to employ pauper labour in the sick wards of workhouses and, indeed, the General Consolidated Order of July 24th, 1847, allows certain paupers "whom the master may deem fit to perform any of the duties of a nurse" to act in that capacity. As to the master's competence to judge in such circumstances the Order is discreetly silent. The objections to this proceeding have long been recognised; thus in 1865 the Poor-law Board recommended guardians to discontinue as far as possible "the practice of appointing pauper inmates of the workhouse to act as assistant nurses in the infirmary or sick wards." There are, however, it appears, still boards of guardians which are not fully alive to their responsibilities in this matter. An inquest was recently held at the Prescot union workhouse on

[1] THE LANCET, April 2nd, 1904, p. 962.

a woman, aged 73 years, who had been an inmate of the imbecile ward there and whose body was found at the post-mortem examination to bear numerous bruises of a character suggesting that death had been accelerated by violence. The evidence given before the coroner, as reported in the public press, was to the effect that the single day nurse employed had several separate rooms to look after and that two inmates were left in charge of the imbecile ward during the nurse's absence from it. In the opinion of the jury death was due to exhaustion and shock caused by the injuries but there was no evidence to show how the injuries were inflicted. No doubt the Commissioners in Lunacy will have something to say on this point but the impropriety of leaving insane persons in the charge of their fellow paupers is so obvious that the guardians concerned may be expected to see it now for themselves and to take immediate steps to prevent a recurrence of the incident. In connexion with this question of the provision of an inadequate nursing staff reference may be made to the Northallerton workhouse. The medical officer of this institution has tried, and tried in vain, to persuade his board to appoint a nurse for night duty in the infirmary. The present arrangement, as stated by the chairman of the board, is that an inmate of the workhouse sleeps in the infirmary and can summon the day nurse if such a course seems necessary. With a nurse thus on duty for 24 hours a day and an inmate to decide when the patients require attention at night the guardians at Northallerton may confidently hope for a scandal if their medical officer does not insist upon their fulfilling the plain duty of providing suitable supervision which devolves upon them.

THE AREA OF CONCRETE CONCEPTIONS AND ITS LOCALISATION IN THE BRAIN.

Dr. Charles K. Mills, professor of neurology in the University of Pennsylvania, contributes an article of interest on the question of the cerebral localisation of the area of "concrete conceptions." The area concerned comprises the functions of stereognosis, seeing of words and letters, the seeing of objects, the orientation sense (that is, the correct appreciation of the patient's position with regard to surrounding objects and persons), the function of naming, and the function of hearing words and sounds. In his paper, which is published in the *Medical News* of New York of Nov. 5th, Professor Mills suggests that "the cerebral area for object seeing is a large one and probably subdivided, especially in a highly civilised man, into various sub-areas or centres of representation such as those for geometric and architectural forms, and for persons, places, and natural objects." But in order that object blindness shall be complete and permanent the recorded cases would seem to show that it is necessary for lesions to be present in somewhat corresponding locations in both cerebral hemispheres. Transient or recurring object blindness is, however, sometimes exhibited by patients with a lesion confined to one hemisphere. Taking into account the descriptions of the brains of distinguished men studied in recent years by Dr. E. Spitzka of New York and the classical cases of word blindness or mind blindness recorded by Liepmann[1] and Sérieux,[2] Professor Mills concludes that all point to the existence of centres for the recognition of objects by sight in the external temporo-occipital convolutions from the second to the fourth or fifth inclusive. A critical study made of cases personally under care and treatment confirms the conclusion arrived at. A recent case of particular interest in its bearing on the question of localisation is also cited. The case was one reported by Dr. W. A. Holden of New York at the annual meeting of the American Ophthalmological Association in July last. It was a unique case of mind blindness as disclosed by the necropsy, in which the mesial surfaces of both occipital lobes remained free from the lesion while the optic radiations on both sides were also intact. The lesion occurred in, and affected only, the external surface of the brain in the occipito-temporal region. The studies by Dr. Spitzka referred to by Professor Mills comprised descriptions of the brains of Major J. W. Powell, a distinguished ethnographist and anthropologist in the official service of the United States, Alexander Winchell, the distinguished geologist, and Helmholtz. These brains showed remarkable development of convolutions generally, with special prominence of complexity in the parieto-temporo-occipital area, the region which clinical and pathological facts concur in establishing, says Professor Mills, as the area of concrete concepts which are themselves the coördinate products of mental images arising primarily from functions concerned with the ordinary visual, word visual, stereognostic, and auditory centres, the orientation sense, and the naming centre.

[1] Allgemeine Zeitschrift für Psychiatrie, 1902.
[2] Comptes Rendus, Société de Biologie, Paris, December, 1891.

THE TEACHING OF HYGIENE IN UNIVERSITIES AND SCHOOLS.

A PAPER on this subject was read by Dr. G. A. Heron at a meeting of the Incorporated Society of Medical Officers of Health held on Nov. 11th. After stating that his chief object was to elicit opinions as to the best means of securing this particular kind of teaching for school children and university students, Dr. Heron said that he first dealt in public with this subject in a paper which he read some years ago at the Southampton meeting of the association which is now the Royal Sanitary Institute. His proposals were on that occasion very favourably received and in Paris in May, 1903, he brought them under the consideration of the Inner Council of the International Society for the Prevention of Tuberculosis. Among the members of that society are medical men from every country of importance in Europe and America, and in its Inner Council every important country on those continents is represented by medical men. Dr. Heron's colleagues on the council appointed a committee of their number to report on his suggestions with a view to their being considered at the next congress. The committee consisted of Dr. Blumenthal, Dr. Calmette, Dr. Landouzy, Dr. Linroth, Dr. Lorentzen, and Dr. Heron. Their report was favourable and unanimous, and Dr. Heron's proposals were consequently submitted at the congress of the society which took place at Copenhagen last May. The Copenhagen meeting unanimously accepted them and resolved: "That delegates be appointed by the Conference to promote in each State education in elementary hygiene in schools and universities, to be followed by an examination in that subject." Dr. Heron was inclined to believe that the British universities would not come forward to help in the matter until hygiene had been taught for some years in the schools and until the public opinion so formed was distinctly in favour of this new departure in university work being thrown open to all undergraduates. Of course, the work of the undergraduate who studied hygiene as a part of his medical curriculum would be kept quite distinct from the teaching in hygiene given to the student who did not intend to take a degree in medicine. It was in the schools, therefore, that the popular teaching of hygiene should be commenced, and it was desirable that an effort should now be made to induce the medical profession to help the movement by giving instruction in the schools. The offer of the post of teacher of hygiene in a school should, unless there was good reason to the contrary, be first made to the medical adviser of the school, and next to the medical

officer of health of the district. Dr. Heron believed that the requisite sanction by the boards of education in the various divisions of the kingdom would not be difficult to obtain. In the discussion which ensued, Sir Henry Craik, secretary of the Education Department in Scotland, said that in his opinion it was desirable that such instruction should be given in schools; if hygiene was adequately taught in schools it would be unnecessary for university students to occupy themselves with it unless for some special use in after life. Dr. A. Newsholme expressed the opinion that hygiene should be made a compulsory subject in the teachers' training colleges. Sir Patrick Manson said that he had been urging upon the Colonial Office the necessity for teaching hygiene in the elementary schools of the Crown colonies.

SARCOMA MELANODES OF HEBRA.

ARRANGEMENTS have been made for the patient whose case was referred to in a letter published in THE LANCET of Nov. 12th in reference to the New Sydenham Society's Atlas to attend next Thursday afternoon at the Polyclinic, 22, Chenies-street, Gower-street, W.C. Members of the New Sydenham Society and others will then have the opportunity of seeing the original case as well as the plates. It is 18 months since the portraits on the eve of publication in the Atlas were taken and the occasion now offered will allow of observation as to the progress made by the disease. The case referred to is a typical example of the rare malady known as "sarcoma melanodes of Hebra" or "idiopathic multiple pigmented sarcoma." This disease—common, perhaps, in ill-developed forms but rare in advanced conditions—has very important relations to gout on the one hand and to the cancerous process on the other. Its careful study is of the utmost clinical importance. It is hoped that Mr. Sankey of Oxford, under whose observation the patient has been, will exhibit some photographs. The portraits which the society's Atlas will contain were taken whilst the patient was under the care of Dr. S. J. Gee in St. Bartholomew's Hospital. We understand that all interested in the subject, whether subscribers to the Polyclinic or not, will be welcome on the day named at 4 o'clock.

THE NEED FOR AN ORGANISED AMBULANCE SERVICE.

AT an inquest held at Lambeth on Nov. 21st Mr. Troutbeck inquired into the death of a girl, named Alice Wood, aged 17 years, of Camborne-road, Southfields, who died in a laundry van as she was being removed to St. Thomas's Hospital to undergo an operation for perforated gastric ulcer. On Nov. 16th she complained of severe pain in the chest and about midnight Dr. E. A. Miller of Upper Richmond-road was called. He found the girl collapsed and, having diagnosed the condition, decided that an operation was her only chance. No cab could be obtained but at about 2 A.M. on Nov. 17th a laundry van was procured and in this she was driven to the hospital where on arrival she was found to be dead. Dr. L. Freyberger, who made the post-mortem examination, said that death was due to heart failure following acute peritonitis caused by the rupture of an internal ulcer and that it was accelerated by the jolting of the van. The coroner's officer said that a horsed ambulance was kept at the Wandsworth Infirmary but that a relieving officer's order was necessary for its use. The jury returned a verdict of "Death from natural causes," and added a rider expressing the opinion that there was urgent need for an improvement in the system of providing horsed ambulances for the various metropolitan districts. With this we quite agree and we earnestly hope that the London County Council, which recently received a deputation from the Metropolitan Street Ambulance Association, will see its way to make proper provision. In connexion with this case we cannot understand why Dr. Freyberger was called to make the post-mortem examination. Surely it should have been made by the hospital pathologist or, if not by him, by Dr. Miller who had diagnosed the condition during life.

DEATH OF DR. GEORGE VIVIAN POORE.

WE deeply regret to announce the death, at the comparatively early age of 61 years, of Dr. George Vivian Poore, consulting physician to University College Hospital, for many years a most valued member of our staff, and widely known to the public as a practical sanitarian. Dr. Poore died at Portland House, Andover, his native place, where he has lived since his retirement from practice some nine months ago and where the garden is situated in which he pursued the experiments so graphically described in his interesting volume "Rural Hygiene." In him the medical profession has lost a sound, brilliant, and versatile exponent of our art, while we, in common with all the senior members of our staff, are mourning a personal friend. The funeral will take place on Saturday afternoon next at 3.15 P.M.

THE OFFICE OF DIRECTOR-GENERAL OF THE ARMY MEDICAL SERVICE.

ANXIOUS curiosity naturally exists among officers of the Army Medical Service at the present time as to who will be their next Director-General, for the post will be vacated by Sir William Taylor, the present Director-General, next week, when his term of office comes to an end. We regret that, beyond referring our readers for guidance to the names of distinguished officers occupying a prominent place in the Army List, we cannot further enlighten them. It was rumoured some time ago that the authorities were about to take an entirely new departure by the appointment of Sir Frederick Treves to the post, but that rumour seemed to us to be altogether too improbable to need any notice on our part and we consequently passed it by in silence. We have, as a matter of course, heard the names of several medical officers mentioned because such is almost invariably the case on occasions of this sort, and three names —two confidently, one doubtfully as "possibly in the running"—have been put forward. But at the time of our writing no official announcement of the name of the officer who has been selected to fill the post has been made. Looking to the brief interval of time that now remains this seems to be somewhat surprising. The selection must ere this have been definitely settled unless, which is possible, the authorities are seeking to extend the time of the present Director-General in office until they have made up their minds on the point.

WE heartily endorse the appeal which Lord Knutsford, the chairman of the Red Cross Council, has just issued with the object of improving the organisation of the voluntary aid resources and of extending and developing the Red Cross organisation on a scale commensurate with the requirements of the country. Past experience has shown that in times of war help of all kinds is freely offered and given, but much of the value of that help is wasted owing to lack of organisation in times of peace.

THE sixth annual dinner of the Medical Graduates' College and Polyclinic will be held at the Trocadéro Restaurant, Piccadilly-circus, London, on Wednesday, Dec. 7th, at 7.15 for 7.30 P.M. Dr. C. Theodore Williams will take the chair and ladies will be admissible as guests. Dinner tickets, 7s. 6d. exclusive of wine, can be obtained

from Mr. A. E. Hayward Pinch, F.R.C.S., 22, Chenies-street, W.C., to whom all communications should be addressed.

AT the meeting of the Faculty of Medicine of the University of London to be held, as we announced last week, at the University at 5 P.M. on Tuesday, Dec. 6th, Mr. H. W. Page has given notice that he will submit the following motion:—

That a committee be appointed to consider and report to the Faculty as to the best means by which teaching and research in the advanced subjects of the medical curriculum can be promoted in the schools of the University by the action of the University.

IN connexion with the visit of the King and Queen of Portugal to this country Don Antonio Maria de Lancastre, physician to their Majesties, has been appointed an Honorary Knight Commander of the Royal Victorian Order.

A TELEGRAM from the Governor of Hong-Kong, received at the Colonial Office on Nov. 21st, states that for the week ending Nov. 19th there were four cases of bubonic plague and four deaths from the disease.

Mr. Anthony Alfred Bowlby, C.M.G., F.R.C.S. Eng., has been appointed surgeon to the King's Household, in the room of the late Mr. Herbert William Allingham.

ASYLUM REPORTS.

The Warneford Asylum, Oxford (Annual Report for 1903).—The average number of patients resident during the year was 92, comprising 42 males and 50 females. The admissions during the year amounted to 28—viz., 16 males and 12 females. Of these 26 were first admissions. Dr. James Neil, the medical superintendent, states in his report that the number of certified patients admitted was three fewer that in the previous year, while the number of voluntary boarders was three more. "The number of voluntary boarders is now larger than in any previous year." Two of the voluntary boarders were restored to health, two left unchanged after a short residence, and the remaining one has improved. On the whole, the cases received were not of so favourable a character as regards prospect of recovery as compared with those of the previous year. Including the five voluntary boarders there have been 126 persons under treatment during the year. The number of patients discharged as recovered during the year amounted to 13—viz., nine males and four females, or 14·1 per cent. of the average number resident. The deaths during the year amounted to five, or 5·4 per cent. as calculated on the same basis. One death each was caused by cerebral hæmorrhage, acute melancholia, general paralysis, chronic nephritis, and senile decay. The case of death from senile decay occurred in a man at the age of 85 years. In the month of February, 1903, an outbreak of influenza occurred and four patients and five members of the staff were attacked. The disease was, however, of a mild type and none of the cases proved fatal. With this exception the health of the community has been good throughout the year. The Commissioners in Lunacy state in their report that the hospital and grounds were maintained in very good order, that the day rooms were bright, warm, comfortable, and suitably furnished, that the water-supply had sufficient pressure to carry water over all parts of the buildings, that the hospital was in telephonic communication with the fire brigade of the town, that the dormitories and building generally were in excellent order, that the general health of the patients was good, and that the medical case-books were carefully and well kept. The committee of management states in its report that the hospital has now an unlimited water-supply from the new reservoir on Shotover Hill. The year has been a favourable one for the finances of the institution. The total disbursements for the year amounted to £7793, leaving a balance of £1304 in the hands of the treasurer at the end of the year. "The Warneford Hospital for Mental Diseases" is the name now adopted by the committee for this institution which hitherto has been called the Warneford Asylum.

East Sussex County Asylum, Hellingly (Annual Report for 1903).—This is the first annual report of the asylum. The average number of patients resident during the year was 232, comprising 97 males and 135 females. The admissions during the year amounted to 778—viz., 329 males and 449 females. Of these 543 were first admissions. Dr. F. R. P. Taylor, the medical superintendent, states in his report that the large majority of the transfers received from other asylums were suffering from chronic forms of insanity and but very few were likely to recover. 71 patients suffered from epilepsy and nine were cases of general paralysis. "As 90 per cent. of the total admissions," says Dr. Taylor, "were transfers, it will at once be evident that the recovery rate calculated on the total admissions must be a very low one. The proportion of old and feeble people among the admissions was excessive. The average age for the men was 44 years and for the women 46 years. The admission of so many old and feeble people must of necessity be a source of great anxiety to the staff and, in addition, compels a larger proportion of staff to patients." All forms of insanity were found in the admissions but in men among the recent cases melancholia appeared to be much more common than mania. "A marked feature was the absence of gross dementia," says Dr. Taylor, "even among those patients who have been in asylums many years, a fact which is probably accounted for by the absence of 'stress,' a large number of the patients coming from the country and not having the same struggle for existence as is found in the large towns. Signs of syphilis were in addition very frequent. On the other hand, however, a large proportion of the patients showed a mild amentia and stigmata of degeneracy were very commonly found." 40 per cent. of the recent male cases and 22 per cent. of the recent female cases had a history of heredity. "It is evident," says Dr. Taylor, "that whilst town dwellers are very liable to break down in the struggle for existence and develop dementia those people who live in secluded villages in the country and continually intermarry have a tendency sooner or later to suffer from more or less congenital mental enfeeblement." The number of patients discharged as recovered during the year amounted to eight, comprising four males and four females, or 3·5 per cent. of the average number resident. The deaths during the year amounted to 13, or 5·6 per cent. as calculated on the same basis. Of the deaths one each was due to general paralysis and senile decay, two to cancer, two to pulmonary tuberculosis, and the rest to other causes. The general health of the institution has been good, as shown by the low death-rate, and with the exception of dysentery and tuberculosis there has been no case of infectious disease. The Commissioners in Lunacy state in their report that the management of the asylum was energetic and efficient, that the day rooms and dormitories were bright, cheerful, and well and tastefully furnished, that the dress of the patients was neat and their personal condition generally satisfactory, and that the medical case-books were kept well and diligently. The committee of management states in its report that the electric lighting of the asylum is in working order, that the warming and ventilating arrangements are satisfactory, and that the sewage system works efficiently.

BRISTOL HEALTH COMMITTEE.—On Nov. 15th Mr. Colston Wintle, L.R.C.P. Lond., M.R.C.S. Eng., was re-elected chairman of the health committee of the Bristol city council.

THE METROPOLITAN HOSPITAL SUNDAY FUND.—A meeting of the council of the Metropolitan Hospital Sunday Fund was held at the Mansion House on Nov. 22nd under the presidency of the Lord Mayor, when it was decided to recommend the names of Dr. Amigo, the Roman Catholic Bishop of Southwark, the Rev. C. J. Procter, vicar of Islington, and Alderman Sir James Ritchie to fill vacancies on the council and to invite the Corporation of the City of London to nominate a representative. The annual general meeting of the constituents of the fund will be held at the Mansion House on Dec. 16th. Sunday, June 25th, was selected, subject to the approval of the general meeting, as "Hospital Sunday" next year.

THE EVOLUTION OF MAN'S DIET.

By HARRY CAMPBELL, M.D., F.R.C.P. LOND.,
PHYSICIAN TO THE NORTH-WEST LONDON HOSPITAL AND TO THE HOSPITAL FOR NERVOUS DISEASES, WELBECK-STREET.

VIII.[1]

THE PRE-CIBICULTURAL COCTURAL PERIOD (*Continued*).

VEGETABLE FOOD.

WITH the exceptions of the Esquimaux and the Fuegians, who live where vegetation is scant or absent, vegetable food enters largely into the dietary of all the pre-cibiculturists, and many are the kinds of vegetable substances pressed into their service as food or medicine: Powers gives 73 as used by a single tribe of Californians, Batchelor and King 137 as employed by the Ainus, while according to another writer the Tasmanians made use of as many as 37 different roots alone, and the Australian women are said to gather roots "in endless variety."

Before classifying the various vegetable foods of the pre-cibiculturists special reference may be made to those of the exceptionally circumstanced Esquimaux and Fuegians. Some of the Esquimaux such as those of the South Sound Colony, the most northerly inhabitants of the globe, are said to have no vegetable food whatever, while others are able to procure a limited supply. Perhaps the most important to them is seaweed, which is often eaten with blubber, either without any preparation at all or after being simply washed in fresh water; and among their other vegetable foods are the crowberry, bilberry, dandelion, sorrel, angelica, Iceland moss, and the contents of the stomach of the musk ox and reindeer. "If a Greenlander kills a reindeer," writes Nansen, "and is unable to carry much of it home with him, he will, I believe, secure the stomach first of all; and the last thing an Esquimaux lady enjoins on her husband when he sets off reindeer hunting is that he may reserve for her the stomach of his prey" which contains "a very choice collection of the finest moss and grasses which that gourmet, the reindeer, picks out for himself." As to the Fuegians, it would appear that they are without any vegetable food except a few berries, chiefly of the dwarf arbutus, and a globular bright yellow fungus which grows plentifully on beech trees.

The various kinds of vegetable foods consumed by the pre-cibiculturists will now be considered seriatim.

Roots.—Roots constitute an important source of food. Many of them belong to the natural orders liliaciæ and orchidæ. Yams and the rhizomes of the bulrush and bracken fern are much sought after; some of the yams are very large, the Bushwomen digging up one kind which is as long "as a man's arm and much thicker." The task of digging for the roots falls to the women and inasmuch as the sole implement employed is a fire-hardened stick it is, as may be imagined, no very light one. In order to procure a yam half an inch in circumference and a foot in length the Australian woman needs to dig with her pointed stick a hole about a foot square and two feet deep. The Veddahs dig with a pointed stick for wild yams and other roots; the Bushwomen use a pointed stick which is weighted at one end by being passed through a perforated stone, and by means of this primitive tool they grub up wide areas in their search for roots. Barrow says: "By the search for these [= roots] the whole surface of the plain near the Horde was scratched." Root digging is indeed an important industry among pre-cibiculturists and furnishes a surprisingly large store of food: thus there are certain Australian tribes who subsist chiefly upon the rhizome of the bulrush and we read of their women carrying on their heads large bundles of these rhizomes contained in nettings; and further how a Californian squaw will, by means of her fire-hardened stick, procure half a bushel or more of the kais-root in a single day, and again how the Ainu women are busily engaged throughout the summer in laying in wood and edible roots for the winter, starting out "in groups very early in the morning and returning with their loads on their backs at night." Much time is indeed spent by the women and children of all pre-cibicultural communities save the Esquimaux and Fuegians in the ingathering of vegetable food and one may any day come across large parties of them thus occupied among the Australian aborigines.

Small seeds.—Perhaps the most interesting seeds which the pre-cibiculturists collect for food are the grass seeds, since it was assuredly the recognition of the high nutritive value of these that led to the cultivation of the cereals (maize, wheat, barley, oats, rice and millet), a step which, as we have seen, was a necessary forerunner of civilisation. It is probable that all the pre-cibiculturists collect grass-seeds, when procurable; certainly the Australians and Californians do, the former harvesting the seeds of silver-grass, bower grass and millet, and the latter (among several others) those of the sand-grass, bunch-grass, wild rice, oats and wheat. The pre-cibicultural inhabitants of the oldest lake dwellings of Germany and Switzerland collected and pounded in stone mortars the seeds of some wild cereals, either spelt or barley.

The means adopted for harvesting small seeds are many and ingenious. Among the Californians the woman carries a large basket on the back and by means of a smaller scoop-shaped one held in the hand sweeps the ripe grass and empties the seeds thus collected into the larger one; or she holds a long, deep, conical basket under the left arm, while a smaller basket held in the right is swept in a semi-circle among the ripe seeds and brought round to the larger one into which the contents are discharged at every stroke; or, again, the squaw carries in one hand a basket and in the other a wicker-work arrangement like a tennis bat, with which she beats the grass heads over the basket; and yet another method is to sweep a long-handled basket repeatedly through the seeds.

Many other small seeds besides those of the grasses are collected by the present-day pre-cibiculturists—such, e.g., as those of the pigweed or purslane of England; these are small and black, like gunpowder, and the Australians obtain them in large quantities by pulling up the plants, throwing them in heaps, and after a few days collecting the seeds which have dropped out; the natives are said to get into splendid condition on this food during the season.

The larger seeds and "nuts."—Among the larger seeds on which the pre-cibiculturists subsist may be mentioned those of the oak (acorns), sunflower, cactus, pond-lily, water-melon, and of several species of pine and leguminous plants. Of pine seeds those of the Bunya pine are typical, constituting as they do a highly important food among the Australians; the cones are over a foot in length and the seeds bigger than chestnuts; when the ripening season arrives, generally in January, the natives assemble in the bunya groves from great distances round, coming sometimes as far as 100 miles, and in such high value are these trees held that they are carefully protected and pass down as hereditary property from generation to generation, affording, it is said, the only instance of inherited property among these people. Acorns entered into the dietary of the early European races and they are to this day largely consumed by the Californians and the Ainus; according to Powers as much as four-sevenths of the total food-supply of the Californians living in oak forests consists of acorns and there are still old Indians who prefer their acorn meal to the finest wheaten flour. The acorns are gathered by the squaws and old men in deep conical baskets and Powers describes how "the invariable sound that first salutes the ear as one approaches a village is the monotonous thump, thump of the pestles used by the patient women in pounding the corn," and again how on a sweltering day not a sound will be heard but this "eternal thump." So highly do the Californians esteem the acorn that they dedicate to it a special dance—the "all-eating dance"—of a semi-religious character; the dance lasts for several hours and at the finish acorn porridge is handed round.

That some of the early races of Europe subsisted on acorns is shown by the fact that in the neolithic relic beds of the Italian settlements in the Lake of Finnon large stores of them, as well as of hazel-nuts, have been found, some still adhering to the pipkins in which they were roasted; hazel-nuts, acorns, and water-chestnuts have also been found in the oldest lake-dwellings of Germany and Switzerland.

The varieties of nuts consumed by pre-cibicultural man are innumerable, and constitute valuable foods, some, indeed—e.g., the Queensland nut—being, it is said, well worthy of cultivation, and Government wisely prohibits timber merchants from felling the trees that bear them.

[1] Nos. I., II., III., IV., V., VI., and VII. were published in THE LANCET of Sept. 10th (p. 781), 17th (p. 848), 24th (p. 909), Oct. 1st (p. 967), 15th (p. 1097), 29th (p. 1234), and Nov. 12th (p. 1368) respectively.

Fruits.—Many varieties of luscious fruits and berries are, of course, eaten by pre-cibicultural man, but, as we have seen, these afford but little nutriment, being chiefly valuable on account of the acids, salts, and water they contain. Among the luscious fruits may be mentioned the water-melon, yielding two crops annually, and prized chiefly on account of its seeds, which are rich in oil, and the fruit of the gigantic tartar tree of South Africa which Chapman pronounced the most luscious he had ever tasted. The Australians gather many kinds of fruit but they do not appear to set great account by them; in the South, however, the natives come from long distances to feast upon the *kurt*, a fruit resembling a red cherry, but having no stone; they take up their abode in the districts where the fruit abounds, remaining so long as the crop lasts.

Green vegetables, like the fruits, are of little energy-yielding value, and like them, too, are chiefly prized for the salts and water they contain; they are eaten both in the raw state and cooked. The Australians consume considerable quantities of the highly saline pig's-face and sow-thistle, chiefly for the large amount of salts they contain: the former is taken as a sort of relish with almost every kind of food. Clover, the young shoots of the bulrush, and the young leaves of the cotton bush are also eaten by them. The Californians consume large quantities of green food in the spring, especially clover, the early gathering of which is celebrated by the "clover dance:" a whole village may be seen squatting in a lush clover meadow plucking the blossoms. The wild lettuce is also a favourite with them and there are several varieties of green food which they are in the habit of boiling.

Fungi.—Though of little nutritive value fungi, when available, appear to be eaten by all the pre-cibiculturists.

Seaweed.—Pre-cibiculturists living near the sea-coast, such as the Esquimaux, Californians, and Ainus, use seaweed as food, as did the Tasmanians in the past.

Gum.—Gum, which according at l ast to modern teaching, has no nutritive value, is freely partaken of by certain pre-cibiculturists, such as the Bushmen and Australians. The latter procure large quantities from the acacia or common wattle tree by cutting notches in the bark as soon as the summer heat is over; the gum exudes and is collected in large baskets and stored. Sturt found numbers of bark troughs filled with the gum of mimosa and a large quantity made into cakes upon the ground. In the summer months the natives assemble in the acacia districts for the purpose of collecting the gum, often holding their annual barter meetings at these places.

Manna.—A sweet substance resembling small pieces of loaf sugar exudes and drops from the leaves of some kind of gum trees and is collected by the Australians; mixed with gum acacia and dissolved in water it makes an agreeable drink.

THE STORAGE OF VEGETABLE FOOD.

Vegetable food admitting much more readily of storage than animal food, it is not surprising to find that the pre-cibiculturists store the former more largely than the latter. The Australians cache some vegetable foods but they do not appear to resort to the practice to any great extent, possibly because wandering long distances in search of vegetable food and visiting successive districts at their harvest season they are able to procure a fairly continuous supply throughout the year. On the other hand, the Californians store large quantities, especially of the much-prized acorns: as many as 100 bushels have been found in one wigwam and Powers describes how in a Californian hamlet each smoke-blackened hut has one or more wickerwork acorn granaries attached to it; some of the tribes collect large quantities of the cammas root in the summer and after drying stock it for winter use, and certain of the northern tribes store roots and seeds in large wickerwork cages built in the trees, the trunks of which are smeared with pitch to keep away vermin; the seeds of grasses are parched and ground before storage; they also store the flour obtained from the rhizomes of bulrushes; the prickly pear is stored after having been sun-dried or cooked; mesquit pods containing hard seeds are gathered in autumn and cached till the spring; large quantities of pine nuts are cached in dry places and are said if properly stored to remain fresh and edible for several years. The Andamanese store the seeds of the breadfruit in nets and leaves; the Esquimaux garner berries and reindeer moss; and, as we have already seen, large stores of hazel nuts, acorns, and water-chestnuts have been found in the early lake-dwellings of Europe.

VEGETABLE FOODS CONSUMED IN THE RAW STATE.

Pre-cibicultural peoples consume their vegetable food both raw and cooked, but, as might be expected, they eat a larger proportion of it raw than do the cibiculturists. We moderns cook all our vegetable food except the luscious fruits, nuts, and those which are eaten under the name of salads, the latter generally being taken with vinegar which helps solution and digestion. Seeds we but seldom eat raw and rarely "roots," and these generally rather as relishes than as foods, as in the case of the radish and onion. On the other hand, pre-cibicultural man consumes a considerable quantity of vegetable food of every kind in the raw state—not only the luscious fruits, nuts, and green foods (e.g., wild lettuce, pig's-face, and sow-thistle), seaweeds and mushrooms, but a number of seeds (e.g., melon seeds) and roots (e.g., petah root, muurang root, root of common orchis and of certain sedges), a fact of interest as reminiscent perhaps of pre-coctural times and as suggesting that already before the coctural period man had grubbed up roots for food just as baboons do. As might be expected, some vegetable foods are consumed by pre-cibicultural peoples both raw and cooked.

Another interesting and suggestive fact in connexion with the vegetable food of the pre-cibiculturists is that some of it is put through a species of preparation which does not necessarily involve cooking. Thus both the Californians and the Australians eat the flour they obtain by crushing the various grass-seeds, both raw and cooked, and the Californians eat raw sunflower seeds after a preliminary crushing, the advantage of this initial milling or crushing being that it breaks up the cellulose meshwork of the seeds, thus increasing their digestibility and saving the work of mastication. Again, the Australians subject the vegetable substance known as by-yu to prolonged maceration for the purpose of removing certain noxious ingredients and, having thus rendered it fit for food, eat it either raw or cooked. Do not these facts strongly suggest that man had begun to submit his vegetable food to artificial processes before he had learnt to cook it?

THE PREPARATION OF VEGETABLE FOODS.

The pre-cibiculturists display in their methods of preparing their vegetable food a resourcefulness and an ingenuity which cannot but excite our admiration. Sheer necessity has made them good practical botanists, well versed in the nature and characteristics of every species of plant likely to serve them as food; they know how to harvest and to hull the wild cereals, how to dry and to grind various seeds and roots and to make of the flour biscuits, cakes, and puddings, and—most remarkable of all—how from a number of disagreeable and even deadly vegetable substances to make wholesome and palatable foods. The preparation of vegetable foods, like the ingathering of it, falls to the lot of the women; they it is who hull the grain, grind the seed and roots, free the food of acrid and poisonous matters, and undertake all the complex details of cooking, for cooking with them is no sinecure, in proof of which it will suffice to refer to the fact that roots are often cooked in rush baskets which get burnt and rarely serve for more than two cookings—almost as labour-wasteful a method as that of Ho-ti, immortalised by Charles Lamb; we may judge of the number of baskets used from the fact that when several Australian families live near and cook their roots together the baskets sometimes form a pile several feet high.

Cooking without preliminary preparation.—Sometimes the vegetable food is cooked straight away without undergoing any preliminary preparation save perhaps washing. Thus the Australians roast the seed of the bunya in hot ashes much as we roast chestnuts, having first slightly bruised them, doubtless for the purpose of breaking the capsule; also the fern-root; the Californians roast acorns in the same way; the Andamanese cut up certain roots into pieces, wrap them in large leaves, and cook them on burning logs; and a large number of roots like the muurang are cooked in ovens after simply being washed, while others are boiled without any previous preparation.

Methods of hulling grain.—The Californians display as much ingenuity in hulling the wild cereals as they do in harvesting them. The seeds of the sand-grass are first ground and the chaff remaining is then winnowed and sifted out, while in the case of wild oats the squaw hulls the grain by placing a quantity in a basket, moistening it slightly, and then churning and stirring the mass with sticks, by which manœuvre the chaff is made to accumulate on the surface,

when it is burnt off by passing fire-brands over it, this process being repeated until the grain is tolerably clean.

Methods of grinding.—Both seeds and roots (the latter in endless variety) are ground into meal after being dried in the sun, parched before a fire, or actually roasted. Thus acorns before being ground are dried in the sun and grass seeds are sun-dried, parched, or roasted; again, the Californians roast the seeds of certain pines and the Australians the root of the common fern before grinding them. Sometimes, however, roots and the larger seeds are pounded into paste without first being dried. The grinding and pounding are generally done by means of two stones; the Australians use a large bed stone and a smaller one which is held in the hand; the Californians sometimes employ a stone pestle and mortar and sometimes a wooden mortar. The meal, or paste, obtained by the crushing process may, as we have seen, be eaten without any further preparation, but it is generally mixed with water and made into biscuits, cakes, puddings, porridge, or mush, which are stone baked, steamed, or boiled.

Methods of preparation involving the removal of objectionable ingredients.—So repellent in their natural state are some of the vegetable substances which serve as food for the Australians that Curr could only account for their having come into use on the hypothesis of a divine interference by which they were taught how to convert them into useful foods, and so elaborate are the means which they adopt to this end that Dr. Leichhardt, a scientific explorer, was unable to obtain food for his almost starving party from a collection of vegetable produce in various stages of preparation which he came upon in a deserted Australian camp. Nay, more than this, the natives of one district may be quite unable to utilise many of the plants which serve as food for the natives of neighbouring districts. It seems highly probable that the art of freeing certain vegetable substances from objectionable ingredients so as to fit them for food was once, if it is not to this day, familiar to all the pre-cibiculturists; our knowledge of the dietetic customs of the surviving pre-cibicultural peoples is not sufficiently complete to say this positively, but the art is certainly known to the Australians, Californians, Bushmen, Andamanese, Ainus, and even to the all but wholly carnivorous Esquimaux who dissolve the excess of saline matter from seaweed by washing it in fresh water just as the extinct Tasmanians were in the habit of doing.

The noxious principles are got rid of either by maceration in water or by the application of heat. The Australians prepare several vegetable foods by maceration. One of the most valuable of these foods is the by-yu, the pulp which encases the nut of a certain species of palm and which in its natural state acts as a violent cathartic and emetic: the women collect the nuts in March, place them in shallow pools of water, and leave them to soak for several days; they are then transferred to holes dug in a sandy soil and lined with rushes, after which they are covered up with sand and leaves; in about a fortnight's time the pulp is found to be dry and fit for consumption, either in the raw state or roasted, the kernel, however, remaining poisonous. The nuts of the cycas media, or nut palm, are crushed, dried in the sun for three or four hours, and then steeped for as many days in a running stream, ground to a fine paste, and baked in underground ovens. The beans of the bean-tree are steeped in water for from eight to ten days; after this they are dried in the sun, then roasted, and finally pounded into a coarse meal, from which biscuits, resembling coarse ships' biscuits, are prepared by adding water and afterwards baking.

The methods of maceration adopted by the Californians are very like those of the Australians: thus acorns after being shelled are dried in the sun and then pounded into flour; the flour is placed in a hole dug in porous (sandy) ground and water is poured in and allowed to soak away several times until all trace of bitterness is removed: from the flour thus prepared is made a black bread having the consistence of cheese flavoured, it may be, with berries and herbs; also porridge and puddings. The Californians likewise remove the noxious principles from many varieties of green shoots and leaves by immersing them for a few minutes in boiling water and afterwards washing them in cold and squeezing them, the process being repeated again and again until all trace of the objectionable ingredients has been eliminated. The Andamanese remove the bitterness from roots and large seeds by cutting them into pieces and allowing them to soak in hot water for days together, the Ainus free acorns of their bitterness by repeated boilings in water, and the Botocudos understand how on similar lines to prepare meal from the poisonous manioc.

As instances of the removal of poisonous ingredients by means of heat may be cited the practice of the Shohones (Californians) who render certain poisonous roots edible by baking them in underground ovens. Buck-eyes, a species of horse-chestnut, are for a similar reason roasted underground, and are then boiled to a pulp by means of hot stones. When hard pushed the Californian prepares the soap-root (used for poisoning fish) in the following way: the roots are made into a heap and covered with green leaves; over this a fire is built and allowed to burn for several hours until the poison is thoroughly roasted out, when the root is quite sweet and palatable. In like manner the Bushmen remove the bitterness from the wild melon by cooking it in underground ovens.

A third method of treating ill-tasting or poisonous vegetable substances so as to fit them for food is by the addition of some other substances: the Australians treat the mene, an acrid-tasting bulb producing dysenteric symptoms, by pounding it to a paste with earth and in this way destroying its noxious properties, and the Ainus remove the bitter taste from certain bulbs by boiling them with a special kind of earth.

Method of extracting starch and sugar unknown to pre-cibiculturists.—It is somewhat remarkable that, in spite of the elaborate preparation through which certain of the pre-cibiculturists put their vegetable foods and in spite of the fact that many of these foods are rich in starch and sugar, no pre-cibiculturist people has learnt how to extract these substances. The roots they dig up often contain an abundance of starch, and as showing how rich uncultivated plants may be in sugar I may refer to the fact that in 1876 an application was made to protect a method of extracting this substance from a plant which grows wild in Australia. That these valuable nutritive ingredients have not been extracted by the pre-cibiculturists is to be explained, I take it, by the great dearth among them of suitable vessels for holding water, especially of vessels made of fireproof material; so long as the material of these vessels consisted of skins or finely plaited wickerwork, the difficulties in the way of extracting starch and sugar were necessarily very great; the possibilities in this direction were greatly increased when earthenware came into use, and this was not until the cibicultural age had been reached.

Preparation of vegetable food by burial.—The Australians bury netted bags of bunya nuts about the beds of creeks; by the time they have lain for months underground they have acquired an offensive smell and are in this condition eaten with great relish. The Andamanese prepare the seeds of the breadfruit as follows: after the removal of the skin the food is "partially sucked," whereupon it is half boiled, wrapped in leaves and buried in moist soil; here it remains several weeks until the monsoon breaks, when the decaying and offensively smelling deposits are dug up, the seeds freed from their decaying matter and dried in the sun or over the fire, and then stored in nets or leaves; when required for use they are again baked.

Substitute for vinegar.—The Californians obtain a substitute for vinegar in the shape of formic acid by placing the leaves of the wild lettuce over an ant's nest; when covered with ants the leaves are removed and eaten.

HONEY.

Honey, when procurable, is consumed by all the pre-cibiculturists, and this probably means by all except the Esquimaux and the Fuegians. It certainly enters into the dietary of the Australians, Californians, Veddahs, Botocudos, and Bushmen as well as of the pigmies of the Andaman Islands and the Uganda and Congo Forests, with all of whom it constitutes a staple food. The quantity of honey obtained is often considerable: Lumholtz, referring to a find by Australian blacks, says "the amount of honey in this tree astonished me"; the Australian natives carry away in baskets specially made for the purpose what they cannot eat on the spot, and so great is the quantity which the Andamanese obtain that they realise a large sum annually by selling it to the residents at Port Blair: they store it in bottles and barrels, and are thus generally able to provide a continuous supply throughout the year. The larva in the comb before it becomes the bee is also consumed, except by the Australians, who refuse it however hungry they may be.

Wild bees are much smaller than the domesticated varieties, those in Australia being not more than half the size of the house-fly, and many of them do not sting. The honey they yield is generally dark, though there is also a lighter variety; it is less delicate in flavour than that of the domesticated bee; sometimes it is bitter, and not infrequently sour from fermentation which is apt to take place in old deposits and from exposure to the sun. The hives are made in the hollow branches of trees and generally at considerable height from the ground so as to render them as secure as possible against pillage, and being thus protected from the sun the honey, even in the hottest weather, remains cool and solid. Hive-hunting is a regular occupation and is undertaken by the men who, as they wander through the forests, are ever on the alert for a swarm; Lumholtz describes how the Australian blacks passing through a wood were always gazing up at the trees and how they would detect the bees when flying at a height of 90 feet and so track them to the hive; again, we read how a Veddah stealing through a forest will listen for the humming sound and on hearing it will disappear and return with a fresh comb "in an incredibly short time." The hive, in the case of the Bushmen at least, is the property of the discoverer.

Having located a hive the hunter secures it either by climbing or, more rarely, by actually felling the tree. The Bushmen obtain honey in large quantities from the gigantic baobab tree, scaling the trunk by means of pegs driven into the bark. To obtain the honey the aperture of the hive is enlarged. The Veddahs employ for this purpose a small honey axe, which is said to be their "constant" companion; having enlarged the opening they blow into the hive, sometimes first chewing some aromatic substance, and so drive the bees out; whereupon the comb is cut out with the axe. The Australians, after enlarging the aperture, extract the honey by inserting an arm. A common way of eating honey with the Australians is as follows: a large piece of the inner bark of a tree is smeared with honey, which thus becomes partially absorbed, and the primitive sweetmeat is handed round to be eagerly sucked and chewed by all the company in turn; when sucked dry it is again replenished with honey and again sent round. Bits of grass which have been soaked in honey are also sucked and the Veddahs employ decayed wood in a similar way.

(To be continued.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

ANNUAL MEETING OF FELLOWS AND MEMBERS.

THE twentieth annual meeting of the Fellows and Members of the College was held on Nov. 17th. There were present 34 Members and 17 Fellows, including ten members of the Council. Mr. JOHN TWEEDY, the President, was in the chair.

There was a delay of a few minutes in commencing the proceedings as a quorum (30) was not present. When the quorum was obtained the PRESIDENT laid the annual report of the Council before the meeting and said that he thought most people looking at the report would be struck with the large amount of work which the Council had had to perform. He was sure that never before in the history of the College had there been so many questions of public importance under the consideration of the Council. In many cases the advice of the Council had been asked by various departments of the Government and he believed that the answers returned by the Council had proved of great service. For example, the Secretary of State for the Colonies had sought the advice of the Royal College of Surgeons and the Royal College of Physicians of London on the question of the advisability of the establishment of an examination and a diploma in tropical medicine. In this matter the two Colleges did not see quite eye to eye, for while the Royal College of Physicians did not think that there was any need for such a diploma, inasmuch as tropical medicine was only a small part of general medicine, the Royal College of Surgeons thought that, considering how large a part of the British empire lay within the tropics, steps should be taken to encourage the study of tropical diseases. The two Colleges, however, had agreed to appoint visitors who were to inspect the schools of tropical medicine and to report at the end of the year. The fact that the Colleges had been consulted on such an important subject showed the growing importance of the two Colleges. There were many other matters of great importance referred to in the Council's report. He might mention the report on the Central Midwives Board by Dr. Ward Cousins, the representative of the College on that Board. This was of great interest and value. The Council had also been asked by the Company of Spectacle Makers for its views upon a proposal to include sight testing in the examination held by the company. This matter was far wider than at first sight might seem to be the case, for it was merely one example of the tendency for tradesmen to prescribe instruments and appliances. The Council had replied that no one should be deemed competent to order or to prescribe any medical or surgical remedy or appliance who had not had an efficient medical and surgical training. The relation of the medical profession to the coroner's court had engaged the attention of the Council but as there was a motion on the agenda paper in connexion with this matter he would only mention that a long and elaborate report on the subject had been presented to the Council by a special committee and that the members of that committee had devoted much time and trouble to obtaining information. The Council had received a communication from an officer at Aldershot complaining that soldiers were often able to obtain medical certificates which enabled them to outstay their leave or even to desert. In consequence of this the Council wished to call the attention of the Fellows and Members of the College to the importance of extreme care in giving certificates in such cases. The President mentioned that the interdepartmental committee on physical deterioration had acknowledged its indebtedness to the College for the reports received from the Council. The President also stated that 3475 copies of the annual report of the Council had been sent out.

In reply to Dr. W. G. DICKINSON the PRESIDENT said that matters of the general policy of the Council could not be discussed but only the matters referred to in the report.

Dr. DICKINSON asked what were the regulations by which duly accredited reporters were admitted to the meetings held at the College, for he had been refused admittance to the meeting held to elect the members of the Council although he was a duly accredited representative of a medical journal.

In reply the PRESIDENT stated that reporters were admitted to all meetings at the College, such as the annual meeting of Fellows and Members and the separate meetings of Fellows and of Members, but that the election of members of Council was not a real meeting and only Fellows could be present.

In reply to a question from Dr. G. DANFORD THOMAS as to how the matter of the relations of medical practitioners to coroners' courts came before the Council, the PRESIDENT stated that the Council had received a letter from the London County Council asking it to name skilled pathologists to undertake post-mortem examinations but the Council had not felt justified in giving the names of such persons.

Mr. E. D. VINRACE suggested that it would be well in future in the notice summoning the annual meeting to state that the meeting had only the power of recommendation.

The PRESIDENT promised that the suggestion should be brought before the Council and he pointed out that the governing body of the College was the Council and that resolutions of neither the Fellows nor the Members could be anything more than recommendations.

Mr. K. H. CORNISH asked whether the Council objected to the registration of students and the PRESIDENT replied that the matter was still under consideration.

Surgeon-Major J. INCE proposed a vote of thanks to the Council for the report which it had submitted but he did not press the matter as there seemed to be a wish to postpone it to a later period of the meeting.

Mr. T. GARRETT HORDER moved:—

That the Council be asked to take the necessary steps in conjunction with the Royal College of Physicians to insure that all persons who pass the Conjoint examination shall be legally entitled to call themselves doctors.

He pointed out that the holders of the English Conjoint diploma laboured under great disabilities as they did not possess the right to the title of Doctor yet their examinations were as thorough as those of bodies granting this title. Some tables in the Council's report showed that the holders of the

English Conjoint diploma had been much more successful at the examinations for entrance into the army and navy medical services than diplomates of most of the other examining bodies, including the universities. He could not suggest how it should be done but he considered that the British Medical Association Bill for amending the Medical Acts was likely to be useful.

Mr. F. W. COLLINGWOOD seconded the motion and claimed that all general practitioners should have the right to the title of Doctor.

The PRESIDENT said that the Council had taken many steps to bring about this change. In 1877 a petition was sent to the Privy Council from the Royal College of Physicians of London and the Royal College of Surgeons of England and a draft charter was drawn up by which these two bodies should have the power to grant degrees in medicine and surgery. Two governmental committees sat on the question, and as a result the University of London was reorganised. What would ultimately develop from the present University of London no one could say, but he did not think that the Privy Council would be willing to make any change at present.

Mr. GEORGE BROWN pointed out that Mr. Horder's motion said nothing about obtaining power to grant degrees; all that was needed was that the two Colleges should approve of their diplomates employing the title of Doctor. The Royal College of Physicians could easily decide the question as it was its by-law which denied the title to its licentiates. The inability to style himself Doctor was a great wrong done to a Member of the Royal College of Surgeons as he was liable to be mistaken for a greengrocer. He felt that if he were now at the commencement of his medical career he would not enter for the Membership of the College.

Mr. J. BRINDLEY JAMES supported the motion and mentioned that the Licentiates of the Royal College of Physicians of Ireland were entitled to be called Doctor and were so styled by the College itself.

The motion when put to the meeting was carried *nemine contradicente*.

Mr. JOSEPH SMITH then brought forward the second motion:—

That this meeting considers the reply of the Council to the resolutions passed at the last annual meeting of the Fellows and Members to be most unsatisfactory. In view of the repeated refusal of the Council to accede to wishes of the Members expressed in meetings to which they have been annually summoned for 20 years, this meeting emphatically repudiates the claim of the Council to represent the Members and regards its attitude in this question as not convincing to the great majority of the body corporate.

This motion, or one similar to it, had been carried year after year and each year the same reply had been given. It was an absolute anomaly that the Members, who formed by far the greater part of the body corporate, should be debarred from all share in the government of the College. The President could not claim to be really the President of the College, he was only the President of the Fellows. He would only ask, could not some way be found to give the Members some representation on the Council.

Mr. BROWN was sure that the President was a great power in the College and if the President would only make an attempt to advance this matter something would be done. It was in the interest of the College that he (Mr. Brown) came to those meetings, not in his own interest.

Mr. VINRACE claimed that many who would have liked to become Fellows of the College had been debarred on account of the expenditure of time and money required. So that the general standard of the Fellow of the College was not really higher than that of the Member, yet the Fellow had the franchise and the Member had not.

Mr. J. C. SMITH maintained that the present arrangement was un-English, for it was taxation without representation.

Dr. DICKINSON appealed to the President to ask the Council to give the Members a fuller account of the discussion in the Council on the resolutions carried by these meetings.

Mr. S. C. LAWRENCE said that the usual reply sent by the Council was neither dignified on the part of the Council nor courteous to the Members who supply the main part of the funds by which the College exists.

The motion when put to the meeting was carried with one dissentient.

Dr. DANFORD THOMAS then moved:—

That the report of the committee of the Council on "the relations of the medical profession to the coroners' courts" is unsatisfactory and that this meeting regrets that the Council did not see their way to make an independent inquiry into the matter with the assistance of ome Fellows and Members having intimate knowledge of the subject.

He considered that the Council by investigating this subject was doing a service not only to the medical profession but to the public also. When first he heard that the Council was considering the subject he had hoped that the Council was really going into the question but in the report referred to nothing was said as to the relation of medical men to the coroner's court. The Council had indeed taken much trouble in investigating the proposed legislation on the subject but had not investigated the irregularities which had occurred in one particular coroner's court. Dr. Danford Thomas said that he himself had always had the greatest assistance from medical men. The London County Council had endeavoured to enforce certain conditions on candidates, but some of its suggestions were contradictory to statute law and many were ridiculous. The main reason for the Bill promoted by the British Medical Association was the present difficulty by which the surgeons to cottage hospitals were unable to obtain fees for evidence at inquests on patients in these hospitals. The real point in dispute in the coroner's court referred to the question whether it was right to ignore utterly the medical man who had attended on the case. One absurd suggestion in the London County Council's Bill was that an inquiry should be held in the case of every death after an operation. It would be difficult to imagine a more ridiculous suggestion.

The motion was seconded by Mr. CORNISH.

The PRESIDENT pointed out that the report referred to had been received but not approved by the Council.

A MEMBER considered that the arrangement by which the medical man who saw the patient was not called at the inquest favoured crime.

Mr. BROWN said that he hoped the Members could look to the College to take up the matter.

Dr. DICKINSON urged that by By-law XV. the College had promised at all times to protect and to defend the Fellows and Members in the exercise of their rights.

The PRESIDENT mentioned that the Council had taken legal advice in certain specific cases and it had been assured that nothing could be done.

The motion was carried *nemine contradicente*.

Dr. DANFORD THOMAS proposed, and Mr. BROWN seconded, a vote of thanks to the President for taking the chair. This was carried and a brief reply of the PRESIDENT terminated the proceedings.

"CHURCH BELLS" AND THE HOSPITALS.

Church Bells is a weekly journal devoted to Church matters which takes for its motto the line,

"Ring out the false; ring in the true."

This being so it is somewhat surprising to find the following incident brought to our notice. In the issue of *Church Bells* of Nov. 11th there appeared at p. 1016 the following paragraph:—

HOSPITAL PAYING WARDS.

We are glad to find ourselves in agreement with an article in "Our Hospitals and Charities," in reference to the need for paying wards in our Metropolitan Hospitals. At present—so far as skilled surgery is concerned—the poor man or woman can obtain the gratuitous services of an eminent surgeon in the Hospital, at the somewhat heavy price of being publicly operated on for the instruction or amusement of the medical students, while the rich man is charged one hundred guineas, or more (if it is thought that he can afford it), for what is often quite a slight incision.

Sir Dyce Duckworth thereupon wrote the following letter to the editor of *Church Bells*, who did not insert it in his journal but instead sent a reply which we print below:—

[COPY.]

To the Editor of *Church Bells and Illustrated Church News*.

SIR,—In your "Comments" in your issue of Nov. 11th I notice that you allude to the heavy price paid by the poor in respect of their being publicly operated upon "for the instruction and amusement of the medical students."

I will ask you to reconsider this statement, and put it to you to declare that you conscientiously think this is a fair or proper statement to be published in a paper conducted by churchmen for church people. It can only come from a writer who is profoundly ignorant of what he is writing about, and is a cruel insult to the distinguished men who are capable of performing such operations, and an equally cruel and unworthy attack on the medical students of to-day.

I ask you to allow me to repudiate it with righteous indignation, and to add that for gentlemanly bearing, sympathy, and gentleness nothing can surpass the conduct of our hospital students on such occasions, conduct which in this and in all their ministrations is

under the supervision of the senior staff who carry out these serious duties. To venture to speak of "Amusement" amidst such scenes argues the existence of a fiendish and inhuman propensity which, thank God, is quite unknown in any British hospital with which I am acquainted. One can only pity the base-mindedness of a writer who dares to impute such qualities to young men, many of whom are graduates of our Universities, and all of whom are shortly to be entrusted with the lives and highest interests of our fellow men.

I ask you to insert an apology for this most improper and frivolous remark in your next issue.—I remain, yours faithfully,

DYCE DUCKWORTH, M.D., LL.D.,
November 14th. Senior Physician to St. Bartholomew's Hospital.

Church Bells and Illustrated Church News,
5 and 6, Tower-street, St. Martin's-lane, W.C.,
London, November 17th, 1904.

DEAR SIR,—I am obliged to you for your letter dated November 11th, in which you are good enough to express your views in regard to a paragraph appearing in *Church Bells* of November 11th. I fail to see how the paragraph in question could be said to contain a cruel insult to the distinguished men and leaders of the profession who are well capable of performing such operations. I do not think I need say more than to assure you that the article in question was written by one who has a very close and intimate knowledge of the working of our hospitals, and that there was nothing in the paragraph to which you take exception for which ample proof could not be adduced.

I have the honor to be, Yours faithfully,
THE EDITOR.

The editor of *Church Bells* must have curious ideas upon manners if he thinks that a deliberate statement in a public print that the surgical staffs of hospitals are in the habit of performing operations upon patients for the amusement of students is not an insult to the members of such staffs. We notice, further, that he says that there was nothing in the paragraph for which ample proof could not be adduced. He has not deigned to supply Sir Dyce Duckworth with his proof, so perhaps he will be kind enough to supply us with such proof. Further, we see that the article is attributed to one who "has a very close and intimate knowledge of the working of our hospitals," so if the editor cannot supply us with the proof from his own personal knowledge he can allow the writer of the paragraph to do so.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Staff Surgeon R. C. Munday to the *Sutlej*. Surgeons: F. C. Robinson to the *Sutlej* and C. J. E. Cock to the *Pembroke*, for disposal.

ROYAL ARMY MEDICAL CORPS.

The following postings are notified in Indian Army Orders:—Colonel J. F. Williamson, C.B., C.M.G., to be Principal Medical Officer of the Bombay and Nagpore Districts, relieving Colonel F. W. Trevor, transferred in the same capacity to the Poona District, in relief of Lieutenant-Colonel J. G. Harwood, who reverts to a substantive appointment. Major J. Hennessy is transferred from the Bombay to the Aden District. Lieutenant-Colonel J. D. T. Reckitt, Lieutenant R. B. Hole, and Lieutenant M. F. Grant are held in readiness for service in India.

INDIAN MEDICAL SERVICE.

The King has approved of the following promotions among officers of the Indian Medical Service:—Captains to be Majors (dated July 27th, 1904):—*Bengal Establishment:* Patrick Balfour Haig, Thomas Richard Archer Fullerton, Ralph Henry Maddox, Edward Victor Hugo, Harry George Melville, Herbert Austen Smith, Douglas Richard Green, George McIver Campbell Smith, Hubert Malins Earle, and Joseph George Hulbert. *Madras Establishment:* Pulteney Charles Gabbett and John Lewis Macrae. *Bombay Establishment:* Francis Edward Swinton, Sidney Harvey Burnett, and Thomas Jackson. Lieutenants to be Captains (dated June 27th, 1904): Godfrey Eustace Charles, Anderson Gray McKendrick, Owen St. John Moses, John Wishart Little, Fred William Sumner, Harold Rothery Nutt, John Alfred Barnes, William Duncan Ritchie, Norman Emil Henry Scott, John Kenneth Sprot Fleming, Evelyn Charles Hepper, Charles Edward Southon, George Fowler, James Husband, Henry Bertram Foster, George Charles Lovell Kerans, Christopher Birdwood McConaghy, Henry Warwick Illius, Edward Wemyss Brown, John Beresford Christian, Andrew Murphy, Frederick Troughton Thompson, Lawrence Percival Brassey, Colin Forbes Marr, Satis Bose, and Patrick Laurence O'Neill.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Major C. Godson to be Surgeon-Lieutenant-Colonel (dated Nov. 8th, 1904).

VOLUNTEER CORPS.

Royal Garrison Artillery (Volunteers): 1st Cumberland: The undermentioned medical officers resign their commissions:—Surgeon-Major J. H. Dickson (dated Nov. 19th, 1904) and Surgeon-Captain R. L. Clark (dated Nov. 19th, 1904). *Rifle:* The Queen's Rifle Volunteer Brigade the Royal Scots (Lothian Regiment): Lieutenant J. B. Jamieson resigns his commission and is appointed Surgeon-Lieutenant (dated Nov. 19th, 1904). 1st Volunteer Battalion the Hampshire Regiment: Surgeon-Captain H. M. Brownfield is borne as Supernumerary whilst commanding the Hampshire Volunteer Infantry Brigade Bearer Company (dated Nov. 19th, 1904). 3rd (The Blythswood) Volunteer Battalion the Highland Light Infantry: Surgeon-Captain J. W. Logie resigns his commission (dated Nov. 19th, 1904). 4th (Stirlingshire) Volunteer Battalion Princess Louise's (Argyll and Sutherland Highlanders): Surgeon-Major A. D. Fraser to be Surgeon-Lieutenant-Colonel (dated Nov. 19th, 1904).

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

The Woolwich Companies: James Stratton Warrack to be Lieutenant (dated Nov. 19th, 1904).

INDIAN ARMY REFORM.

The broad outlines of Lord Kitchener's scheme for the reorganisation of the Indian Army have now been published in an order issued at Simla. India, exclusive of Burma, will be divided into three commands, the principle underlying the new arrangements being that the army in peace should be organised and trained in units of command similar to those in which it will take the field. This will no doubt entail some redistribution of the forces and bring about many salutary and desirable changes but it is at present premature to say how far these will affect the medical services. Devolution is to be the order of the day and we are glad to notice that Lord Kitchener lays stress upon one point—namely, that matters are to be decided and settled in the respective commands instead of the responsibility of doing so being avoided by their being referred to headquarters. This will equally apply, of course, to questions of medical administration and will give more freedom and independence to the local medical authorities and will lessen at the same time the work hitherto thrown upon the officers of the medical authority at headquarters.

WARRANT OFFICERS OF THE ROYAL ARMY MEDICAL CORPS.

We are glad to hear that the case of the warrant officers of the Royal Army Medical Corps is receiving favourable consideration. This act of justice on the part of the War Office will be greatly appreciated.

THE WAR IN THE FAR EAST.

A despatch has been recently received at St. Petersburg from the brave and resolute defender of Port Arthur, which besides throwing a little light upon the military events connected with its defence tells us something about the labours of the surgeons and detachment of the Red Cross Society in that frequently and severely assaulted garrison. General Stoessel writes in warm terms of gratitude about the zealous work of the society and adds that "our surgeons under the direction of Dr. Hubbenet are performing marvels." General Stoessel, as might be expected, adopts an optimistic tone when speaking of the power on the part of the beleaguered garrison to hold out. It is not easy to exaggerate the very important part which this siege has already played in the past or may hereafter play in the near future and the knowledge of this will explain why the Japanese have been ready to make so many assaults attended with such great losses to themselves. The siege of Port Arthur, like that of Ladysmith in the South African war, has been a great source of weakness to the besiegers by wasting the strength of an army there which should be operating elsewhere and where it is urgently needed. The siege of Port Arthur, so deplorable from a humanitarian point of view, has lasted for nearly six months and so long as it continues to last some 70,000 Japanese troops cannot join the main Japanese army operating against General Kuropatkin in Manchuria. Almost everything depends, moreover, upon whether Port Arthur has fallen or is still holding out upon the arrival of the Baltic fleet. We learn from the correspondent of the *Daily Mail* at Shanghai that it has been proposed by some Russian sympathisers with the sufferings of General Stoessel's force to send a hospital ship to Port Arthur for the purpose of removing

the severely wounded from the fortress. The Japanese, however, were not satisfied with the *bona fides* of the projectors of this scheme and refused to sanction it. A fresh proposal is now being made which may be carried out. The proposers of the scheme state they are willing to take Japanese surgeons on board and to convey to Port Arthur anæsthetics, of which it now has none.

With regard to the belligerent forces within close distance of one another in Manchuria there is a prolonged lull. The armies are moving and manœuvring, with occasional unimportant encounters, on the Shaho, but they are otherwise inactive, and the big battle declared to be imminent has still to come off. The cold at night is extreme and the rivers are frozen. The Japanese troops are stated to be well supplied with warm clothing and to stand the climate well; indeed, the health of the troops, both Russian and Japanese, is declared to be satisfactory on the whole. Dysentery is, however, as might be expected, a prevalent disease among both armies on the Shaho as well as in the garrison at Port Arthur. The Russian hospitals, many of which are supplementary to the regular army hospitals and are large and well equipped by the instrumentality of the Red Cross societies, have been greatly relieved of pressure of late by the evacuation and transport of their sick and wounded to hospitals in the rear and base by the Siberian railway. The work of the Sisters of the Red Cross Society and their devotion in attending to the Russian wounded during the present war have been beyond all praise.

The *Pharmatzevtitcheski Viestnik* says that recently the editor of the *Manchurian Army Gazette* sent in a query to the Imperial Military Medical Academy from Telin asking whether some means had not been discovered for bringing back to consciousness the victims of lyddite fumes. Information was also asked with regard to antidotes for persons poisoned by these vapours. In answer to the first question the Academy said that no specific counteracting agent had been found, adding a recommendation to resort in such cases to those means usually adopted in poisoning cases, such as the inhaling of oxygen, artificial respiration, and so on. As to remedies for lyddite poisoning, exposure to the air was recommended.

It was only in 1903 when General Kuropatkin was Minister of War that a special committee was formed to deal with the military medical question in Russia. Unfortunately the war broke out before this committee had finished its labours, and although the War Office in conjunction with the Red Cross Society spared no money to put the medical service on a proper basis, the imperfections were many when as a result of the battles of last August wounded men filled the field and other hospitals. Thanks, however, to General Kuropatkin the medical department of the army has already acquired a degree of autonomy which has much facilitated its work, although it has not done so well as might have been expected.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 8373 births and 4866 deaths were registered during the week ending Nov. 19th. The annual rate of mortality in these towns, which had been 15·0, 14·9, and 15·7 per 1000 in the three preceding weeks, further rose last week to 16·6 per 1000. In London the death-rate was equal to 16·9 per 1000, while it averaged 16·5 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 5·1 in Hornsey, 7·0 in Great Yarmouth and in West Bromwich, 7·9 in Barrow-in-Furness, 8·1 in Bournemouth, 9·7 in Rochdale, and 9·8 in Willesden and in Rotherham; while the highest rates were 21·2 in St. Helens, 21·5 in Stockport, 21·6 in Wigan, 22·0 in Newcastle-upon-Tyne, 22·1 in Blackburn, 22·3 in South Shields, 24·5 in Hanley, and 25·4 in Coventry. The 4866 deaths in these towns last week included 444 which were referred to the principal infectious diseases, against 394, 425, and 380 in the three preceding weeks; of these 444 deaths, 143 resulted from measles, 78 from diphtheria, 76 from diarrhœa, 54 from scarlet fever, 46 from whooping-cough, 42 from "fever" (principally enteric), and five from small-pox. No death from any of these diseases was registered last week in Croydon, Brighton, Bournemouth, Southampton, Ipswich, Great Yarmouth, West Bromwich, King's Norton, Smethwick, Aston Manor, Warrington, Newport (Mon.), or Merthyr Tydfil, while they caused the highest death-rates in Plymouth, Hanley, Grimsby, Liverpool, St. Helens, Wigan, York, Stockton-on-Tees, and South Shields. The greatest proportional mortality from measles occurred in Plymouth, Hanley, Grimsby, Liverpool, St. Helens, Wigan, Middlesbrough, and Stockton-on-Tees; from scarlet fever in Bootle; from diphtheria in Hanley, Stockton-on-Tees, and Swansea; and from whooping-cough in Coventry, Derby, and South Shields. The mortality from "fever" and from diarrhœa showed no marked excess in any of the large towns. Two fatal cases of small-pox were registered in Halifax and one each in Hanley, Huddersfield, and Newcastle-upon-Tyne, but none in any other of the large towns; and only one small-pox patient remained under treatment in the Metropolitan Asylums hospitals on Saturday, Nov. 19th. The number of scarlet fever patients in these hospitals and in the London Fever Hospital was 2773 at the end of last week, against 2725, 2782, and 2843 at the end of the three preceding weeks; 259 new cases were admitted during the week, against 305, 294, and 294 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory system, which had been 289, 285, and 324 in the three preceding weeks, further rose to 361 last week, and were 36 in excess of the number in the corresponding period of last year. The causes of 45, or 0·9 per cent., of the deaths in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Bristol, Nottingham, Leicester, Leeds, and in 46 other smaller towns; the largest proportions of uncertified deaths were registered in Liverpool, St. Helens, Manchester, Salford, Preston, Sheffield, Middlesbrough, and Sunderland.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 16·7, 17·8, and 17·5 per 1000 in the three preceding weeks, further fell to 17·3 per 1000 during the week ending Nov. 19th, but was 0·7 per 1000 above the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 11·0 in Leith and 12·0 in Greenock to 18·4 in Glasgow and in Edinburgh. The 571 deaths in these towns last week included 19 which were referred to whooping-cough, 19 to diarrhœa, five to measles, two to diphtheria, one to scarlet fever, and one to "fever." In all, 47 deaths resulted from these principal infectious diseases last week, against 63, 58, and 59 in the three preceding weeks. These 47 deaths were equal to an annual rate of 1·4 per 1000, which was slightly below the mean rate last week from the same diseases in the 76 large English towns. The deaths from whooping-cough, which had been 16, 17, and 20 in the three preceding weeks, declined again to 19 last week, and included 14 in Glasgow and two in Dundee. The fatal cases of diarrhœa, which had been 30, 21, and 27 in the three preceding weeks, declined again last week to 19, of which nine were registered in Glasgow, four in Edinburgh, and four in Dundee. The deaths from measles, which had been six, nine, and eight in the three preceding weeks, further declined to five last week, and included three in Glasgow. The deaths attributed to diseases of the respiratory organs in these towns, which had been 108, 119, and 136 in the three preceding weeks, further rose last week to 154, and were 18 in excess of the number in the corresponding period of last year. The causes of 26, or nearly 5 per cent., of the deaths registered in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 20·6, 21·5, and 20·2 per 1000 in the three preceding weeks, rose again to 24·2 per 1000 during the week ending Nov. 19th. During the past four weeks the death-rate has averaged 21·6 per 1000, the rates during the same period being 15·4 in London and 17·1 in Edinburgh. The 176 deaths of persons belonging to Dublin registered during the week under notice were 29 in excess of the number in the preceding week and included 20 which were referred to the principal infectious diseases, against 16, 13, and 12 in the three preceding weeks; of these, eight resulted from

measles, five from diarrhœa, four from whooping-cough, two from "fever," and one from diphtheria, but none from small-pox or scarlet fever. These 20 deaths were equal to an annual rate of 2·8 per 1000, the death-rates last week from the principal infectious diseases being 1·0 in London and 1·1 in Edinburgh. The fatal cases of measles, which had been four, six, and seven in the three preceding weeks, further rose last week to eight. The deaths from diarrhœa, which had been six, five, and four in the three preceding weeks, rose again last week to five. The 176 deaths in Dublin last week included 29 of children under one year of age and 42 of persons aged 60 years and upwards; the deaths of infants slightly exceeded the number in the preceding week, while those of elderly persons showed a decline. Five inquest cases and four deaths from violence were registered and 64, or more than a third, of the deaths occurred in public institutions. The causes of 11, or more than 6 per cent., of the deaths registered in Dublin last week were not certified.

Correspondence.

"Audi alteram partem."

THE NEW SYDENHAM SOCIETY'S CLINICAL ATLAS.

To the Editors of THE LANCET.

SIRS,—A letter which you were good enough to publish six months ago asking for the loan of portraits illustrating the diagnosis, &c., of variola and varicella was productive of such excellent results that I am tempted to make another application. The committee in charge of our Atlas is now engaged, amongst other matters, with *drug eruptions*. Of the iodide, bromide, chlorals, and arsenical eruptions we have abundant material, but some additional ones illustrating the quinine rash, that due to copaiba, and some others would be very acceptable. Most of these rashes are very transitory and thus it becomes very difficult for us to procure by the aid of our own artists good portraits of them. If a case is sent up for a portrait to be done its features are usually gone or much altered before the artist gets to work. Thus it is only when exceptional opportunities have been utilised that good portraits of this class are secured. Any of your readers who may possess such, or know where they can be obtained, will confer a favour by communicating with either Dr. Colcott Fox or myself. May I add that any drawings illustrating the results of the bites of insects will be valued.—I am, Sirs, yours faithfully,

JONATHAN HUTCHINSON,
Honorary Secretary, New Sydenham Society.

15, Cavendish-square, Nov. 23rd, 1904.

ANARCOTINE IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

To the Editors of THE LANCET.

SIRS,—Acting upon the suggestion of an American colleague, Dr. L. W. Sterne, I began six months ago to use anarcotine in the treatment of cases of pulmonary phthisis. The results thus far obtained are highly satisfactory and seem to indicate that this drug acts as a specific; they certainly justify the claim that anarcotine is a valuable addition to the means at our disposal in combating tuberculosis, and hence I beg you will find space for this short notice.

Where practicable I ascertain the maximum diurnal temperature of the patient and exhibit anarcotine (crystals) in powders with saccharum album as follows: one powder eight hours, and one powder four hours before such maximum, and one powder at the time of the maximum temperature. Where for any reason I cannot ascertain the maximum temperature I am guided by the patient's subjective symptoms and administer the drug accordingly, and where there is no hectic fever the doses are given at 9 A.M., 3 P.M., and 9 P.M. The dose is one grain and this is increased every fourth day until amelioration is marked; thereafter the doses then given are maintained. Thus far I have not exceeded three grains three times a day. Larger experience will show the most advantageous mode—as regards time and dosage—of administration.

The results observed occur, in regard both to constancy and to time, in the following sequence: cessation of night-sweats, decrease in frequency of respiration and pulse, improved appetite, increase in strength, decrease in amount of expectoration, lowering of maximum and heightening of minimum temperature, and increase in weight. It is noteworthy that in several instances patients whose condition had greatly improved lost ground on ceasing to take anarcotine and promptly regained it upon its resumption. I observe the usual hygienic and dietetic rules and give tonics, cathartics, &c., where I deem them indicated. I hope that the above statements may soon be tested and verified in hospitals, &c. I am, Sirs, yours faithfully,

JAS. H. FRAZER, M.R.C.S. Eng.

Forest Gate, London, E., Nov. 15th, 1904.

ON THE ACTION OF PERCHLORIDE OF IRON IN BLOOD POISONING AND OTHER DISORDERS.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of Nov. 19th, p. 1415, under the above heading, Dr. P. W. Latham suggests that the value of perchloride of iron in the conditions discussed depends on the presence therein of free chlorine and he adds that it may therefore be desirable to give chlorine in other forms also. Permit me to mention that there is a form in which chlorine might be administered which seems to me more suitable than that which he suggests. I allude to the direct chlor-albumin bodies which have been prepared and analysed by Hopkins and Brook.[1] These are sufficiently stable to allow of accurate dosage and yet contain as much as 6 per cent. of chlorine which they readily yield up. They would be free from the irritating properties of chlorine in solution and be far more likely to introduce this element into the circulation. Moreover, it is possible that such bodies are actually formed in the tissues to protect them from invasion, though proof of this is lacking. In a recent paper[2] I have collected some evidence in support of the idea, already put forward by Noël Paton, Dunlop, and Macadam,[3] that the chlorine retained in fever is combined, not with sodium, as has been universally believed, but with albumin, and that the sodium is retained separately in the blood in order to raise its alkalescence, there being much evidence that a rise in the total alkalinity of the blood is the natural and beneficial response to bacterial invasion. In order to assist in this process I have during the last three years been in the habit of administering sodium citrate in acute fevers. I have not tried using chlor-albumin but have suggested that such bodies would probably have bactericidal properties and may be formed for this very reason. It is noteworthy that, as Simon long ago pointed out, chlor-retention is very marked in those septic fevers for which perchloride of iron has been advocated. Here also, as in pneumonia, wherein retention is also conspicuous, leucocytosis is highly developed, suggesting a possible connexion between the two phenomena. It may be added that both chlor-retention and leucocytosis survive the fall of temperature and both may be alike absent in cases rapidly fatal where little reaction occurs. Direct haloid-proteid derivatives could easily be prepared on a large scale and they have already been used therapeutically by Blum.[4] They are worthy of further trial.

I am, Sirs, yours faithfully,

Nov. 22nd, 1904. G. C. GARRATT.

INTOLERABLE INGRATITUDE.

To the Editors of THE LANCET.

SIRS,—Mr. M. M. McHardy has only himself to thank for his sufferings in a law court. He should have paid no attention whatever to the subpœna and he would have heard no more of it. In a *civil* action there is no power to compel attendance of a skilled witness, though the counsel and judge may say nasty things about him. He is, however, liable to have an action brought against him to recover damage caused by his absence, but practically this is never done.

I am, Sirs, yours faithfully,

Nov. 22nd, 1904. EXPERTO CREDE.

[1] Journal of Physiology, 1897, vol. xxii., p. 184.
[2] Transactions of the Royal Medical and Chirurgical Society, 1904, vol. lxxxvii., p. 125.
[3] Journal of Physiology, 1899, vol. xxiv., p. 331.
[4] Münchener Medicinische Wochenschrift, 1896, p. 1099.

THE WORLD'S FAIR AT ST. LOUIS.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

St. Louis, Nov. 10th.

LEAVING Pittsburg at two in the afternoon the train on the Wabash line winds in and out amid the small hills that confer on the iron country its picturesque appearance. After crossing the Ohio the hills gradually disappear and there remain but undulations till the vast corn-growing prairie lands are reached and the night renders further observation impossible. Next morning the return of daylight reveals a notable change. In the neighbourhood of Pittsburg the leaves had nearly all fallen from the trees but near St. Louis most of them still remained on the branches. Here, then, was the promise of a good climate for the late autumn or winter season. But this anticipation was somewhat marred by the thick fog that rose from the banks of the Mississippi and became quite black as the train neared St. Louis. The whole town seemed covered with a black pall, due mainly to the waste of coal which, instead of being burnt, is in a large measure allowed to escape into the atmosphere in the form of thick black smoke. Towards noon, however, the sun overcame these obstacles and then it was possible to enjoy the Indian summer in all its glory. During my visit, prolonged well into the month of November, we have had beautiful weather, hot sunshine, and blue skies, except in the morning when the town is enveloped in mist rendered black by the smoke. At this time of the year with the memory of London fogs still present in the mind such weather is most enjoyable. Nevertheless, it is doubtful whether St. Louis can be considered suitable for a health resort on account of its climate. The winter is comparatively mild and it is evident that the summer lasts longer than in the more easterly and northerly parts of the United States.

At the exhibition there is a great side show entitled "The Boer War," where sham fights are enacted three times a day and the British and the Boers are alternately defeated with strict impartiality. Some 600 Boers and Britons, including General Cronje and General Viljoen, who actually took part in the real war, are present and so there is a good opportunity of comparing the climate of South Africa with that of St. Louis. The evidence is decidedly in favour of the former. St. Louis, situated on low ground by the side of the Mississippi and close to its confluence with the Missouri, is very damp, and this makes both cold and heat more difficult to endure. When the train crossed the Mississippi the damp white mist was so thick that we lost sight of land when on the bridge. Then the train seemed to meander round wearily over a wilderness of sandy soil and uninhabited and uncultivated ground, avoiding the town and making its way to a station specially constructed in front of the principal entrance to the exhibition. It was only when quite near to the grounds that a few houses were to be seen. However, our first real knowledge of approach was the sight of the linoleum Alps. They form the background of the Tyrolean village and protruding over the surrounding rough palisades are visible at a considerable distance.

On emerging from the Wabash World's Fair station the first impression is that of a new, undeveloped, unfinished locality. Though the exhibition is now not at its opening but its closing days the foot is not safe on the irregularities of the road. Perhaps this is useful for, while looking down to pick out a way, the fact is less observed that even here, at the principal entrance, there is no monumental gate or ornamented approach. There is no sort of dignity or attractiveness about the entrance. On the contrary, any number of individuals are allowed to take their stand on the dusty and vacant space. Here, armed with huge speaking trumpets, they strive to outvie each other in the production of horrid and savage cries. In the language of mountebanks they assail all who approach. Each one shouts that the particular side show it is his business to recommend is the very best and top foremost exhibit in the entire World's Fair. Of course, it is natural to hasten out of this pandemonium and to make for the entrance, deeming that once within the exhibition precincts the arts, sciences, and manufactures of the world will be presented with all the decorum and calm necessary for the thoughtful study of the vast and grave problems involved. Great, however, was my dismay when I found that the speaking-trumpet nuisance also prevailed inside the exhibition. Indeed, I had not proceeded many steps in my search for the liberal arts and scientific exhibits when a deep "Say," that seemed absolutely personal and addressed to myself, caused me to pause. Then the voice imperturbably continued to inquire: "Have you thought of dinner yet?" As it was barely ten in the morning I was obliged to admit that I had not and the voice, from the depth of a huge speaking trumpet, went on to inform me that "it was about time I should do so." But I had now sufficiently recovered from my surprise to escape before hearing the name of the special restaurant about to be recommended. A great many other cries distract and harass the visitor. Even inside the buildings themselves, in the galleries where the most serious exhibits are displayed, there are in all directions individuals at small stalls or tables who shout out and try to attract people to look at and to buy some contemptibly petty object. A new top, for instance, will be spun and offered for sale close to the latest pharmaceutical products, the best exhibits of technical books, or statistical diagrams that can only be understood and appreciated when studied with undisturbed calm and concentrated attention. This painful ordeal made me realise, however, why the American talks constantly of the World's Fair. In Europe we speak of a universal exhibition. A fair is very generally taken to mean an occasional gathering in a rural district for the sale of farm and other produce, followed by rough and simple diversions given in booths and tents by acrobats, conjurors, penny peep-showmen, and others. A universal exhibition, on the other hand, is taken to mean an enterprise supported by various governments where each nation endeavours to show the best that it can do, and the gathering together of these nationalities is as great a solemnity as the meeting of sovereigns or of ambassadors to negotiate an important treaty; indeed, the one generally entails the other. Nothing of the sort can be said in regard to the exhibition at St. Louis. It is indeed a fair rather than an exhibition and the nomenclature World's Fair is not an Americanism but quite correct from the usual European acceptation of the term. It might also be called an international bazaar but it falls far short of a universal exhibition. Yet it occupies more space than the largest exhibition ever held; but then the space is simply wasted and even within the buildings the objects shown are needlessly spread out.

The first thing to the left of the main or Lindell entrance is the model city. This is an avenue lined on both sides by separate buildings. The first is that erected by New York city. This is an imitation of the Pavillon de la Ville de Paris so much admired in 1900, where all that could illustrate the administrative work of the municipality was skilfully gathered together. Of course the greater part of such exhibits deals with public health questions. Thus here also there are models and photographs and drawings setting forth the building of the aqueducts and other works that provide New York with its water-supply, its gas, and its electricity. Then there are working models of the incinerator, of the garbage boats for throwing refuse out at sea, and all that appertains to the collecting of cinders and other rubbish. The street-cleansing department sets forth with what military discipline it has been organised and here a very useful afternoon can be spent studying these administrative technicalities, particularly as there are attendants who are not only ready to give explanation but who are employés of the New York municipality and belong to the very services which it is their mission to explain. The fact which seemed most novel to me is that the administration has in a measure succeeded in teaching and forcing the inhabitants to sort their own rubbish. In England, as a rule, everything is thrown indiscriminately into the dustbin and in Paris into the *boite à Pourbelle*. In New York each householder has not one *boite à Pourbelle* but several. In one he puts only the cinders from his fireplaces. In another he puts what is technically termed in England the soft core—that is, organic matter, bones, cabbage stumps, egg shells, and kitchen refuse. A good deal of this garbage is pressed and oil is extracted which is exported to Europe and comes back to America in the form of toilet soap and so on. The coal ash has been employed to convert the marshy soil of Ryker's island into building plots. It is calculated that the land thus made is worth £2000 an acre and 100 acres have thus been redeemed in the course of two

and a half years. It would be difficult to find a case where a more advantageous disposal of refuse has been made.

Opposite New York city Kansas city has a building of its own but not so interesting. The chief feature is a large map of the State showing the geographical centre, the population centre, the corn centre, and various other centres, but it is not clear what this has to do with Kansas city, which, according to its own showing, is certainly not the centre of everything. Close by the twin city building of St. Paul and Minneapolis gives some idea of the vast milling and elevator industries of this great wheat and corn centre and then there is a model town-hall to which several cities send exhibits, but, nevertheless, the inside is very bare. Boston has some maps and photographs to show its park system and its water-supply, both vast enterprises. Other towns also send drawings relating to similar subjects.

On the other side is the World's Fair hospital, a very important institution. It is a temporary building and in no wise a model one. It cannot be considered in itself as an exhibit, but some of the furniture placed within and the surgical instruments employed are exhibited. There are 20 beds and a ward for males and females. Then there are two operating rooms, one for minor and the other for major surgery. The staff consists of seven medical officers and two at least, sometimes three, are constantly on duty and sleep on the premises. Their post is no sinecure for they have from 80 to 100 cases a day. Of course, the majority of cases consist of some passing indisposition or trivial hurt, but there are occasionally very serious cases necessitating amputations and other major surgical operations. In some instances death was instantaneous. Thus an iron bolt falling from the great wheel cut a man's head in two; a pneumatic tube bursting cut off the back part of another man's head. There has also been some quarrelling resulting in revolver wounds. One patient had been hit in five different places. There is, however, no record of any great catastrophe. Not more than six or eight persons have been hurt at any one moment. One lady arrived after her nose had been shot through. So there are other savages at the World's Fair besides those who shout through the speaking trumpets. Looking through the books I found that from the beginning of the World's Fair up to Nov. 2nd the number of cases entered as receiving treatment at the hospital within the exhibition grounds amounted to no less than 12,500. Many are cases of indigestion and some of ptomaine poisoning, and when a case requires lengthy treatment it is sent by ambulance to a town hospital if there is no danger in the removal. Of course, there are ambulances ready harnessed to start for any part of the Fair and the hospital has telephonic communication in all directions. The ambulance carriages present no new feature and there is nothing much to be said about them. Both in the construction of the hospital and in the ambulance service an opportunity has been missed of exhibiting new and model systems or contrivances.

Nearly opposite the hospital is the United States War Field Hospital. This consists entirely of tents which are numerous enough to hold 108 patient. Each tent has six beds. The bedding, including pyjamas and mosquito nets, can be folded and packed in one canvas trunk; a second trunk holds the frame-work of the beds themselves. The tents have double roofs, the lower one being open at the apex for purposes of ventilation. There are a kitchen tent and operating tent, officers' and men's quarters, and mess tent—in fact, everything is in working order. This completeness rather than any new invention or contrivance constitutes the interest of the exhibit.

Beyond the model street and the main buildings there is some rising ground called the Plateau of States, where each State has built a house according to its fancy. They do not, however, contain much that merits investigation. For the most part these structures serve as lounges and meeting places for people coming from each particular State, for they are provided with the local newspapers and some comfortable chairs. Here and there are also some exhibits, photographs, or pictures illustrative of the life in the State after which the building is named. Some of these buildings are made of wood logs to imitate the dwellings of the primitive settlers. Leaving aside these 45 small houses it is in the main exhibition buildings that subjects of special technical interest will be found and these for the most part are confined to the two great structures, that devoted to education and social economy and that consecrated to the liberal arts.

On entering this latter section I came at once upon a very fine and well-organised exhibit of French medical publishers, such as Masson, Alcan, Doin, Maloine, and others. Em. Terquen, 5, Rue des Mathurin, Paris, publishes an illustrated catalogue of all the works issued by these different firms. Close by the British publishers have also fine exhibits, but medical works did not seem to hold so prominent a position among them. A few steps further and also side by side are the chemical and pharmaceutical products of England and France. Of course, the British exhibits were very familiar. There were the great soap and candle firms, Messrs. J. C. and J. Field and Price's Patent Candle Co., the latter having moulded stearine into statues of Liberty each illuminating the world with one of their own candles. The Sheppey Chemical Works with Izal, and the United Alkali Company also with disinfectants for domestic and laundry purposes have a very effective display. Messrs. Hooper and Co., of Russell-street, Covent Garden, show how this firm carried on its business 170 years ago. Messrs. Allen and Hanbury have a large exhibit, especially of invalids' and infants' foods. In ingenuity in rendering attractive that which in itself offers no special feature to the eye Messrs. Burroughs, Wellcome, and Co. have certainly excelled themselves. Formerly they used to exhibit their tabloids in a beautifully carved wooden case of Indian make. This time they have placed their tabloids in artistic crystal jars which hang down from the roof of their case in clusters like differently coloured bunches of grapes from the vine. The effect is really pretty and original. Below there are the battered cases which have gone through various campaigns and exploration expeditions, carrying medical preparations in the smallest possible compass. Messrs. Corbyn, Stacey, and Co. show many drugs and pharmaceutical preparations, including veterinary hypodermic pellets. Messrs. Griffin and Sons exhibit some of their laboratory apparatus, and Professor Hartley of the Royal College of Science, Dublin, has many photographs and substances recently prepared for research purposes. These are very elaborate and repay investigation. Perhaps one of the most remarkable exhibits is shown in a separate building adjacent to the liberal arts building. It consists of a complete plant in operation as employed by Professor James Dewar at the Royal Institution, London, in the production of liquid or even solid hydrogen. It is the largest plant ever erected for this purpose and has attracted well-merited praise and attention.

Passing from the British to the French exhibits of the same category the drawings of M. P. Mallot's method of extracting ammonia from crude sewage are interesting, and then there are the well-known chemical products of Poulenc Frère. The collective exhibits of the Société Chimique de Paris are remarkable, absolutely technical, and not directly connected with any commercial interest. The very elegant pharmaceutical preparations for which the French are renowned and in which they do a large export trade are well represented at St. Louis. The familiar Alcool de Menthe de Ricqlès, the sels de Pennès for baths, Blancard's iron and iodide of iron pills, and Chassaing's appetising wine are all side by side. Messrs. F. Comar et Fils have a very large exhibit with several novelties, notably in regard to cacodylates of sodium and a new compound arsenic acid which is qualified as a proto-cacodylate. It has the properties of cacodylate of sodium but can be given in larger doses and does not produce the objectionable odour of garlic. Then there were the Pharmacie Midy, with elaborate vapourisers and medicaments for the same, the pepto-fer of Jaillet, the iodoléine prepared by H. Schaffner and prescribed for goitres, and the theories set forth in *La Médication Martiale* on the exhibition of iron. The *Pharmacie Normale* has some very neat travelling pharmacies, while close at hand the firm of Dupont show their surgical furniture, operating tables, chairs for invalids, and so on.

The Americans have not so many exhibits in this department as might be expected. There are the Erichson Artificial Limb Co. of Minneapolis, plaster-of-Paris jackets made at Baltimore for the poor and deformed, several homœopathic exhibits, a few patent cures for catarrhs and coughs and various methods of treating diseases that are so boastfully presented as to engender a feeling of profound distrust. But there are also very good exhibits of pills and other drugs by

the firm of Messrs. William R. Warner and Co. of Philadelphia and the representation of an alchemist's laboratory is very picturesque. Messrs. Roessler and Hasslacher of New York had a representation of their chemical manufactures. One of the most remarkable American exhibits is undoubtedly that of Messrs. H. K. Mulford and Co. They are among the first purveyors of antitoxins and vaccine lymphs. They have very extensive laboratories and the working of the same is fully shown and explained by their exhibits and illustrated pamphlets. They have doubtless greatly contributed to dispel popular ignorance and hostile prejudice.

CHOLERA AND PLAGUE IN THE NEAR EAST.

(FROM THE BRITISH DELEGATE TO THE OTTOMAN BOARD OF HEALTH.)

AT the time of writing my last letter, which appeared in THE LANCET of Nov. 5th, p. 1316, cholera seemed to have almost disappeared from Turkish territory. The weekly bulletin for the week ending Oct. 24th contained only three cases and four deaths—all reported from Bagdad. But telegraphic interruption was partly responsible for the apparent reduction in the weekly totals. Later telegrams report that there were nine cases and eight deaths in Bagdad between Oct. 18th and 29th, 35 cases with 27 deaths in Bedra between the 14th and the 28th, and 52 cases with 54 deaths in Zorbatia between the 15th and the 29th of that month. Both Bedra and Zorbatia are in the Bagdad vilayet, close to the Persian frontier. In each three additional deaths occurred before Nov. 3rd, since when they appear to have been free from cholera. In Bagdad no cases have occurred since Oct. 29th.

The mortality at Nedjef, referred to in my last letter and reported to be due to other causes than cholera, has since been inquired into and has been shown to be due to that disease. Cholera has also recently reappeared at Penjvin and Suleimanieh, both close to the Persian frontier. In the former eight cases and two deaths occurred on Nov. 3rd. In the latter the disease reappeared on Oct. 20th; between Nov. 1st and 6th it caused eight cases and five deaths. The reintroduction of the infection to Suleimanieh is attributed to the return to the neighbourhood of the town of the large tribe of the Tchaf, composed of 10,000 tents, who had crossed the frontier and been encamped on Persian territory during the summer months. In the caza of Ranieh, vilayet of Mossul, seven cases and one death occurred on Nov. 7th. Elsewhere the disease would appear to be extinct, so far as absence of news may be taken to justify this conclusion.

On Persian territory cholera would appear to be now extinct in Tehran. In Resht sporadic cases were still occurring as late as Oct. 19th. At Kermanshah there were 42 deaths from the disease in the last week of September. A few cases have also occurred at Houi and at Selmas, five days' distant from Bayazid. Finally, an extremely intense outbreak of cholera has prevailed at Tabriz. The reports as to this outbreak have been contradictory, but it is certain that at one time several hundreds of deaths were occurring there daily. A telegram from the Russian Consul-General there, dated Oct. 16th, stated that between Oct. 8th and 16th more than 3500 persons had died from cholera in Tabriz, and that in one day (the 16th) over 500 deaths had taken place.

On Russian territory the following has been the recent course of the cholera outbreak. In Transcaspia two cases occurred at Merv on Oct. 2nd,[1] one case in the week ending Oct. 17th, and one in the following week. Isolated cases have also occurred at Dushak and Kizil-Arvat on the Transcaspian railway, and in an aoul near Sarakhs. From Baku the following figures have been reported:—

	Cases.	Deaths.
From Oct. 4th to Oct. 11th ...	80	53
,, ,, 12th ,, 18th ...	60	24
,, ,, 19th ,, 25th ...	26	19

Two cases also occurred in passengers arriving at Elisavetpol from Baku. It is stated that the spread of the disease in Baku has been partly due to the contamination of the general water-supply. Out of 48 samples of water taken from the public baths as many as eight were found to contain the cholera bacillus.

A severe outbreak of cholera is reported from Erivan in Transcaucasia close to the Russo-Turkish frontier. The presence of the disease here was first made known on Nov. 29th. A later telegram states that between Nov. 4th and 7th as many as 132 cases with 80 deaths occurred in the district of Erivan. In Saratof, on the Volga, five cases and four deaths occurred between Oct. 4th and 7th; none between the 7th and the 11th; ten cases and five deaths between the 12th and the 17th; and no cases or deaths between the 18th and the 25th. Cholera has also appeared in Astrakhan and its neighbourhood. In the village of Rakhinka, in this government, 12 cases and five deaths of "suspected" cholera occurred between Sept. 27th and Oct. 9th, and none in the following week. In a military outpost on the right bank of the Volga, facing Astrakhan, three cases with two deaths occurred between Oct. 14th and 17th. Between the 18th and the 26th 15 cases and six deaths were recorded in and near Astrakhan; of the cases seven occurred in the city itself and eight in the harbour, in the Cossack stanitza of Ataman, in the Arkhierei suburb, and in the above-named outpost.

A cholera outbreak of some severity has occurred in the Samara government. Two fatal cases were observed in Samara itself in the week ending Oct. 10th, none in the following week, and three cases with one death in that ending the 24th. In the village of Morsh, in the Nikolaeff district, as many as 51 cases with 23 deaths occurred between Oct. 8th and 17th. In the week ending the 24th it is announced that 65 cases of cholera with 14 deaths occurred in ten infected villages in this government.

Two more cases of plague have occurred in Smyrna. The patients were an officer in the army and his sister-in-law, living in the Deirmen-dagh quarter where three of the earlier cases occurred. Both fell ill on Oct. 24th but were not seen by the sanitary authorities until the 29th. Both have since recovered. The diagnosis of plague was based on the clinical symptoms and a bacteriological examination was not made.

Constantinople, Nov. 16th.

[1] All the dates mentioned in this letter are New Style dates.

THE INTERNATIONAL CONGRESS ON DERMATOLOGY.

(FROM A CORRESPONDENT.)

(*Concluded from p. 1454.*)

Syphilitic Diseases of the Heart and Blood-vessels.

Professor VON DÜRING (Constantinople) said that specific alterations of the blood-vessels were not peculiar to the tertiary stage but might occur in any stage of the disease. It was necessary to distinguish between (1) syphilitic alterations which spread from the surrounding tissues to the vessels and (2) those which originated in the vessels themselves. The first form was important from a clinical point of view, especially in connexion with the cerebral vessels. He then described the so-called endarteritis obliterans which consisted in an infiltration of the intima, and in the next place discussed syphilitic aortitis, a destructive inflammation of the media and adventitia. In consequence of this destructive process the walls of the vessels became less resistant against the pressure of the blood and aneurysm of the aorta was established. Specific alterations of the veins were also more frequent than was supposed. Antisyphilitic treatment might bring about absorption of the infiltrations and the progress of the destruction might thus be stopped, but of course the elastic tissue could not be regenerated neither could the lost elasticity be regained. An aneurysm once formed would therefore not disappear, neither would its formation be hindered by antisyphilitic treatment, but the cicatrisation produced by antisyphilitic treatment tended to avert the increase and the rupture of the aneurysm.

Professor VON HANSEMANN (Berlin) said that the cells of which syphilitic growths consisted showed such an abundant proliferation that they resembled sarcoma. The endothelium of the blood-vessels, and more especially that of the lymphatic vessels, was the first to show proliferation and

a plastic endolymphangitis. The disproportion between the cicatrix and the syphilitic alteration was very characteristic. In the liver, for instance, only a small cicatrix was left after a gumma. Professor von Hansemann concluded that diseases of the vessels were not occasional local manifestations of syphilis but were an essential feature of the disease.

Professor RENVERS (Berlin) expressed the opinion that the virus of syphilis was at first rapidly propagated throughout the organism and subsequently had a more local action. There were cardiac lesions in early syphilis which might be compared to those occurring in other infectious diseases. They did not lead to marked anatomical lesions but only to debility of the heart muscle. They had no special characteristics; their only clinical symptom was cardiac debility, and they only became obvious when the heart was over-exerted. In the later stage of syphilis the lesions of the heart muscle developed rather slowly. The patients showed the symptoms of impairment of the heart muscle and of dilatation. Diagnosis was somewhat difficult in the early stage. The patients complained of oppression and of pains in the aortic region and asthma might subsequently develop. Apart from the aorta the coronary arteries might be affected and as a rule stenosis of the aortic ostium was also present; angina pectoris and cardiac asthma might appear. A diagnosis might be made when these different symptoms were present together but a single symptom was by itself not sufficient. Professor Renvers considered that syphilis ought to be suspected when a person otherwise in good health and in whom nervous troubles or toxic processes or infectious disease could be excluded showed symptoms of disease of the heart muscle. By energetic antisyphilitic treatment the ailment might then be cured.

Dr. BENDA (Berlin) said that active ("floride") syphilitic arteritis must be distinguished from the form in which the syphilitic process had come to an end, leaving only cicatrices combined with secondary and accidental inflammation. Active syphilitic endarteritis might occur in either a small miliary or a gummatous form. The gumma might develop from the miliary form. The lesion of the tissue was quite different in the two forms and was especially serious in the case of a gumma which usually brought about destruction of the arterial walls. As aneurysm was produced in the gummatous and not in the cicatrising stage, antisyphilitic treatment was indicated with the object of preventing the aneurysm from increasing in size.

Antisyphilitic Sera.

Professor RISSO (Genoa) reported that in conjunction with Dr. Cipollina he had made experiments on the treatment of syphilis by injections of serum. They used serum obtained from animals immunised after a special method; a case of tertiary syphilis of the nose and 12 cases of secondary syphilis were successfully treated. The cases had not been under observation long enough to justify the formation of opinions as to the permanency of the improvement.

Dr. PAULSEN (Hamburg) mentioned that he had cultivated bacilli from the blood of syphilitic patients on the blood serum of pigs. These bacilli belonged to the same group as those of tubercle and leprosy. He had shown these bacilli two years ago at a meeting of the Hamburg Medical Society. As the result of further experiments he was able to state that these bacilli were almost always found in the blood of syphilitic patients but never in that of healthy persons. Three kinds of serum had been prepared. By injections of the first two sera a great improvement was produced in one out of 14 cases. Much better results were given by the third serum by which in 50 per cent. of the cases treated a complete disappearance of the symptoms and in nearly every case an obvious improvement were obtained. The time was said to be too short to allow a definitive opinion as to the possibility of a relapse. It was remarkable that the serum was of little efficacy in the early stage of syphilis but acted very promptly in the tertiary period, although the bacilli by which the serum had been produced were taken from patients in the early stage. Dr. Paulsen had formed a theory that the early symptoms of syphilis were due to a mixed infection by the bacillus of syphilis and other micro-organisms, whilst in the later stages the bacillus of syphilis was present in pure culture. He concluded his address by saying that the results of the treatment by antisyphilitic serum were promising and that the production of serum should be continued.

Blastomycosis.

Dr. UNNA (Hamburg) said that this disease, which had been described mainly by American physicians and by Dr. Buschke of Berlin, was very like lupus and had also been confounded with syphilis and epithelioma. It was caused by blastomycetes, a species of fungi, and might be cured by large doses of iodide of potassium.

Dr. BUSCHKE (Berlin) confirmed Dr. Unna's views and stated that the reaction of the surrounding tissue which was usually present in epithelioma did not occur in blastomycosis. Two forms of the micro-organisms of blastomycosis must be distinguished; one were the so-called saccharomycetes, while the other were the oidiomycetes. Mixed forms were sometimes observed.

Alopecia Areata.

Professor BETTMANN (Heidelberg) reported that he had been able to produce alopecia in rabbits by poisoning them with abrin. Obviously a toxic substance absorbed through the intestines was the cause of the disease.

Dr. BLASCHKO (Berlin) expressed the opinion that the majority of cases of alopecia were certainly not due to the action of toxic substances. The disease was sometimes contagious and was also a complication of nervous troubles. The results of experiments on animals were not always applicable to the human subject.

Dr. HELLER (Berlin) said that he had observed alopecia after mercurial poisoning.

Many other papers, an abstract of which would exceed the limits of the present articles, were also read at the Congress.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

The Cost of Vaccination.

THE Chorlton Union board of guardians had a discussion on Nov. 18th as to the cost of public vaccination. It was stated that last year the board spent £80 per week for public vaccination fees, cost of lymph, stationery, and vaccination officers' salaries. In the workhouse it cost them within £500 of what was paid in salaries to the whole of the workhouse staff and in the hospital it cost £937 less to pay the salaries of medical men and staff. The speaker considered that special officials should be appointed by the corporation at fixed salaries to do the work. Dr. F. H. Worswick, one of the guardians, protested against what he considered a "manifestly unfair" arrangement. He is reported to have made rather a serious charge against public vaccinators and to have said that they went round to the clients of the medical men and offered free vaccination to persons who were well able to pay. Mr. Jenner-Fust, the Poor-law inspector, stated that the Wigan board had communicated with the Local Government Board on the subject and the latter had formed a commission to receive evidence. The clerk was directed to write to the Wigan board for information. No doubt the dissatisfaction felt throughout the country at the general increase of the rates, "by leaps and bounds," is not unobserved by boards of guardians and they would like to economise where possible. It is not creditable to a people supposed to be sensible and intelligent that a preventable disease such as small-pox should be allowed to have so much of its own way for fear of the outcry of the faddists. The liberty of the subject sometimes means power given to him wherewith he may injure his neighbour, and when a loathsome and dangerous disease is concerned the welfare of the many seems more important than the licence of the few. It would be well for boards of guardians to make careful estimates of the cost of outbreaks of small-pox.

Ulverston Hospital.

A new wing to the Ulverston Cottage Hospital was opened on Nov. 18th. It has been fitted up with the latest appliances for electro-medical treatment. The cost of the extension and appliances amounts to nearly £3000.

Adulterated Coca Wine.

The impudence of those who trade in adulterated food or medicine, liquid or solid, is sure evidence of the easy gullibility of the public. A policeman bought from a grocer's daughter at Farington a bottle of "non-alcoholic coca wine." The county analyst found that it was "a syrup almost devoid of coca wine and containing 3·9 grains of salicylic acid per pint." He said that "to get a medicinal dose a person would have to take a third of a bottle" and

that quantity would be injurious from the amount of salicylic acid it contained. Mr. E. Sergeant, medical officer of the county, said the wine had no medicinal value and was not a medicine. He thought a stop should be put to the sale of such things. For the defence it was urged that the defendant had no intention of breaking the law, that he had bought the "wine" from the Holloway Coca Wine Co. in 1898, and had sold very little of it, and that it was unjust that the retailer who was not responsible should be summoned. However, a technical offence had been committed and a fine of 2*s.* 6*d.* with costs was imposed. It does seem a little hard that the retailer, whose fault is often that of ignorance and too much confidence in the statements of the concocting company, should be the chief sufferer while the latter may go on plying its fraudulent trade with practical impunity.

Death from Anthrax.

A verdict of death from anthrax was given at an inquest at Thornton, near Blackpool, on Nov. 19th. A pig-butcher, named Southworth, a fortnight ago assisted to dress the carcass of a cow and in a few days symptoms of anthrax developed. Mr. F. S. Rhodes of Thornton at the inquest said that death was undoubtedly due to inoculation with the germs of anthrax. He had inspected the carcass of the cow and found that it had suffered from anthrax. The man Southworth noticed a red spot on the back of his wrist. Mr. Rhodes and Dr. F. J. H. Coutts, medical officer of health of Blackpool, performed an operation, but the man died. It seems that another man named Croft, who had assisted Southworth, was also ill but recovered. The prevalence of anthrax is becoming so serious that stringent methods should be adopted for stamping it out.

The Law as to Repairs of Drains.

The corporation of Eccles appealed recently against a decision of the Divisional Court (the Lord Chief Justice, Mr. Justice Darling, and Mr. Justice Channell) reversing a decision of the justices. The matter is of some importance, as it throws some light on the question as to the distinction between a private drain and a public sewer. A drain passed under and received the drainage of a number of houses in Eccles belonging to different owners and the question was whether it was or was not repairable by the local authority. The plaintiff contended that it was a sewer within the meaning of the Act of 1875 and as such was repairable by the local authority. The Divisional Court took this view. On Nov. 14th the Court of Appeal, composed of the Master of the Rolls and Lords Justices Stirling and Mathew, delivered judgment on the appeal. The Master of the Rolls said that the authorities on the point were not in accord, but he thought it clear that the balance of authority was entirely in favour of the view that this drain was "a single private drain" within the meaning of Section 19 of the Act, 1890, and therefore the corporation (of Eccles) was authorised to serve upon the plaintiff notice to repair at his expense under Section 41 of the Act of 1875. Lords Justices Stirling and Mathew concurred and the appeal was allowed with costs. Perhaps one of the points illustrated most clearly by this case is that doctors are not the only people who now and then differ.

A Two Hours' Water-supply.

Although there has been some rain lately and Manchester has been relieved by it and the second pipe from Thirlmere, many places are still suffering from an insufficient supply of water. At Middlewick the water has been "on" for three hours only per day for many months and lately they have only had a two hours' supply, while the high-lying districts have been quite without any regular supply. The inconvenience and distress thus caused can be imagined and there is no wonder that "there is talk of an appeal being made to the Local Government Board to compel the local authority to remedy the existing state of things."

Nov. 22nd.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

New Sanitary Regulations for the Port of Cardiff.

AT the end of September the medical officer of health (Dr. E. Walford) placed before the Cardiff health committee suggested regulations the object of which is to prevent infected vessels approaching the docks or quays while permitting other vessels to proceed to their destination more speedily than they can at present. Some of these regulations are meeting with opposition from the local shipowners. One in particular which they do not approve defines an "infected ship" as one in which there is, or has been during the voyage or during the stay of the ship in the port of departure or in a port in the course of the voyage, any person suffering from small-pox, membranous croup, typhus fever, relapsing fever, puerperal fever, diphtheria, erysipelas, scarlet fever, or typhoid fever. This very stringent definition will no doubt be modified before it is finally adopted. An infected ship having been satisfactorily defined no objection is made by the shipowners to the new regulation providing that such ship shall remain in a convenient situation within the dock or basin so as to prevent unnecessary communication with the shore and until the ship has been boarded by the medical officer of health and in his opinion is free from infection. A very useful regulation is one which requires masters of vessels to answer fully and "if required in writing" all questions put to them. Dr. Walford very properly contends that people are much less likely to tell untruths if their statements are reduced to writing.

The Incorporated Society of Medical Officers of Health.

At a meeting of the West of England and South Wales branch of the Incorporated Society of Medical Officers of Health held at Stroud on Nov. 17th Dr. J. B. Fitzsimons of Hereford introduced a discussion upon the influence of hospital isolation on outbreaks of scarlet fever in small towns. He gave statistics in favour of such isolation and stated that since the establishment of the Hereford Hospital ten years ago there had been only two "return" cases of the disease. He expressed the opinion that a stay in hospital of six weeks was frequently quite unnecessary. With this view Dr. Francis T. Bond was in accord, but he insisted that each case should be treated on its merits and that in every instance parents should be warned against permitting the convalescent child to mingle with others for a few weeks after the return home. Dr. J. Middleton Martin alluded to the importance of "missed" cases in estimating the value of hospital isolation and said that it was impossible properly to weigh statistical evidence for or against hospital isolation without taking this question of unrecognised cases fully into consideration. Dr. W. H. Symons urged the importance of paying greater attention to the classifying of cases in hospital and removing the convalescent patients from those in the acute stage of the disease. He stated that in Bath there were practically no "return" cases. In connexion with the absence of "return" cases in Bath and in Hereford it is of interest to note that in both towns the isolation hospitals are of iron lined with match-boarding.

Remuneration of a Medical Officer of Health.

Reference has already been made to a dispute which has arisen between the Chipping Sodbury rural district council and its medical officer of health (Dr. Francis T. Bond).[1] Upon the addition of three parishes with a population of 5000 persons to the area of the district council it was proposed to Dr. Bond that he should require no addition to his salary, and when he demurred the council appointed temporarily Dr. F. W. Crossman as medical officer of health. The Local Government Board now refuses to sanction Dr. Crossman's appointment and expresses surprise at the action of the district council in refusing to remunerate Dr. Bond while it was willing to pay another medical man. The council has now decided to increase Dr. Bond's salary by £33 a year, the amount he originally asked for.

University College, Bristol.

The annual meeting of the governors of this college was held on Nov. 16th, under the presidency of the Right Hon. Lewis Fry. The report showed that the work of the college had been one of steady progress and that the total number of students was 1084. It was stated that the new wing of the building, which is to be erected at a cost of £3600, is nearly completed.

Nov. 21st.

[1] THE LANCET, Oct. 29th, p. 1252.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

A Lecture on Health.

Dr. Henry O'Neill delivered a lecture on Nov. 15th, in the Ulster Hall, Belfast, on "The Health of the People," the Lord Mayor presiding. The lecture, which has been published since its delivery, was profusely illustrated by lantern slides, diagrams, plans, and specimens of pure food, good clothing materials, sanitary appliances and labour-saving apparatus used by intelligent persons who enjoy life and good health. Almost every possible subject bearing on the health of the people was discussed with all those qualities of experience, humour, and versatility of a man like Dr. O'Neill who has played the different rôles of surgeon to a large hospital, editor of a health journal, city councillor, justice of the peace, curator of a museum of sanitary science, medico-legal expert, and barrister-at-law. The proceeds of the lecture were given to the Orphans' Homes and Workshops for Cripples and Destitute Boys and Girls of Ireland. A cordial vote of thanks was passed to Dr. O'Neill at the conclusion of his lecture.

Epidemic of Typhoid Fever at the Cork District Lunatic Asylum: a Number of Patients and Attendants Attacked.

At the last meeting of the board of governors of the Cork District Lunatic Asylum Dr. O. T. Woods, the resident medical superintendent, reported that a very serious outbreak of typhoid fever had occurred in the institution. 68 of the patients and 15 of the attendants had been attacked and two deaths had resulted. Inquiries had been made with regard to the drainage and the milk- and water-supplies, but apparently there is considerable difficulty in locating the cause. Dr. Woods pointed out that the epidemic is all the more alarming because of the overcrowding which exists. He had sent some of the attendants to the city fever hospital. The board appointed a committee to confer with Dr. Woods and to assist him in every way to deal with the emergency. It is satisfactory to find that Mr. D. D. Donovan, the general medical officer of health, was able to report to the town council that, apart from the outbreak at the lunatic asylum, the city was practically free from typhoid fever.

Nov. 22nd.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Pathogenesis and Mechanism of Congenital Dislocation of the Hip.

AT a meeting of the Academy of Medicine held on Nov. 2nd M. Le Damany read a paper on the pathogenesis and mechanism of congenital dislocation of the hip. He said that at the time of birth the acetabulum was partly filled up and as a result of ancestral tendency was oblique in front. Then rotation of the femur directed the head and neck of the bone simultaneously forwards and inwards. In this way it came about that even the normal conditions of this joint in the infant were very favourable to the production of congenital dislocation. As a precaution M. Le Damany proposed that all newly born infants should wear a garment made so as to prevent the thighs from being extended beyond a right angle. In order to rectify the malposition, which ultimately produced ankylosis and which consisted, as has been already said, in excessive rotation of the femur obliquely in front of the acetabulum, he proposed to apply an apparatus fixing the thigh in a position of flexion and abduction. Under these conditions he has seen a well-marked case recover perfectly without operation.

Fatty Substances in the Treatment of Tuberculosis.

At the same meeting of the Academy of Medicine M. René Laufer said that in tuberculous patients as well as in healthy persons the most marked and most constant effect produced by fatty articles of diet was the retention and economising of nitrogenous substances. He has found that when fat of various kinds was given to tuberculous subjects in increasing quantities the curve showing the total elimination of nitrogen as contained in the urine and fæces at first fell and then remained stationary. The fat was assimilated up to a certain amount, but no further, and the excess was consequently useless except as regards economising of the albuminoids. M. Laufer gave to one series of tuberculous patients fat in large doses (from 150 to 200 grammes a day in the form of cod-liver oil, butter, and salad or cooking oil), while to another series he gave fat in moderate doses (from 150 to 200 grammes in the aggregate). In the first series—namely, with the large doses—the curve showing the patients' weight rose rapidly and remarkably, after which it remained stationary for a time. It then fell—sometimes to less than the level of the original weight, the cause of this being derangement of the stomach, or because the patients lost their appetite for food, or because the power of assimilation failed and the fat passed unchanged into the fæces. In the second series—namely, those with the moderate doses—the curve showing the weight rose slowly but steadily and there was unquestionably an ultimate gain. A dose varying from 100 to 150 grammes, according to individual susceptibilities, appeared to be the maximum quantity actually assimilated. This deserved to be kept in mind when questions of diet for tuberculous patients were under consideration.

Citrate of Soda in the Artificial Feeding of Infants.

At a meeting of the Société Médicale des Hôpitaux held on Oct. 14th M. Variot said that the giving of citrate of soda to bottle-fed infants with whom milk did not agree was highly recommended in England. The practice was almost unknown in France, but in his experience it had proved very useful. Before each portion of milk the infants were given, according to their age, a dessertspoonful or a tablespoonful of a solution containing five grammes of citrate of soda in 300 grammes of water. Used in this way citrate of soda produced no ill-effects whatever, but the solution soon became mouldy. It might therefore be advantageous to prepare it by double decomposition—namely, by the addition of citric acid to bicarbonate of soda until the fluid was neutral to turmeric paper.

Tracheotomy in Diphtheria.

At a meeting of the Société Médicale des Hôpitaux held on Oct. 28th M. Barbier said that there were cases of membranous diphtheria in which tracheotomy was preferable to other methods of treatment. In support of this view he showed a specimen which had been obtained from a child suffering from membranous diphtheria. It was found that intubation had caused the pushing into the trachea of a mass of tracheo-bronchial false membrane which, if tracheotomy had been performed, might have been either expelled spontaneously or withdrawn by the operator.

University Intelligence.

The Vice-Rector of the University of Paris has just opened a students' club room in the university buildings at the Sorbonne. Hitherto there has not been a room of this description, so that except for the class-rooms the students have no meeting-place but the street. In this room there will be newspapers and it will provide the students with increased facilities for social intercourse. The students' coöperative restaurant, which was opened three years ago and in which meals of good quality were supplied at a moderate price, has just been obliged to close its doors. In the first year 118,000 meals were served, in the second year 80,000, and in the third year 40,000. This amount of business was not sufficient to pay expenses and as the liberal donations which it received have been discontinued this philanthropic institution has ceased to exist, a result which is much to be regretted.

Nov. 22nd.

EGYPT.

(FROM OUR OWN CORRESPONDENT.)

Cairo Lunatic Asylum.

IT is fairly obvious that one hospital for the insane, consisting of 500 beds, is not sufficient for the 10,000,000 inhabitants of all Egypt, especially if it is remembered that the Soudan has as yet no asylum of its own. Dr. J. Warnock, in his report for the year 1903 on the Egyptian Government Hospital for the Insane, strongly urges upon the authorities the necessity of enlarging the present asylum, to give an increased accommodation of about 400 beds, and also of erecting a second asylum for at least 600 inmates, which for

health reasons might perhaps be built in the neighbourhood of Alexandria. He also again draws attention to the somewhat extraordinary fact that there is no asylum for European lunatics in the whole country. But it must never be forgotten that it is only 21 years since the Egyptian insane were loaded with iron chains, fastened continually to staples in the wall, and were most inadequately fed and clothed, so that the reforms inaugurated by the sanitary department have already been great. An English matron to superintend the female section and the laundry where patients work, and an English steward to direct the male attendants have now been selected and are being trained to carry out some much needed improvements in organisation and in nursing. It is not generally known that coloured patients become more excitable and irritable during the hot months, but this is well brought out by the monthly admissions for the year which show that the greatest number were admitted in May, June, and July. Hasheesh (Indian hemp) still accounts for 18 per cent. of the total number of male patients admitted, but it is satisfactory to know that the proportion of hasheesh patients has gradually diminished since 1897, when the figures were as high as 32·6 per cent. The reduction is due chiefly to the rise in price of the drug consequent on more energetic measures being taken by the Government to suppress smuggling. Pellagrous insanity caused 10·5 per cent. of admissions and occasioned ten deaths; seven of the pellagrous patients were criminal lunatics, most of whom had already committed murder before being sent to the asylum. The pellagrous are very prone to commit suicide and to injure their children and often suffer from delusions of persecution or of being poisoned; it is therefore high time that the Egyptian Government began to occupy itself with this most important and increasing disease. General paralysis affected 7 per cent. of the total admissions; of the 35 patients six were women and 22 betrayed evidence of past syphilis, while 23 of them were Egyptians or Soudanese. The medical department in Egypt has so frequently been told to wait for much needed money, because the English authorities considered that other matters were more pressing, that now all well-wishers to sanitary progress in Egypt are anxious to see what share of money will be granted as a result of the recent successful financial negotiations with France.

Dr. Andrew Balfour's Report.

The first report of the Wellcome Research laboratories, which are an integral part of the Gordon Memorial College at Khartoum, has just been published at the end of one year's work. Mr. Wellcome's generous gift to the Soudan Government is intended for various technical and economic studies, and especially to promote the study of tropical diseases, human and veterinary, to study the toxic agents employed by the Soudanese, and to carry out such chemical and bacteriological tests in connexion with water, foods, health, and sanitary matters as may be found desirable. Dr. Balfour's pioneer work has been so successful that two new appointments have now been decided upon—a chemist, well versed in agricultural, economic and toxicological work, and a collector, necessarily a highly-trained observer whose duty it will be to traverse the country and to collect blood films, biting and injurious insects, parasites, photographs, drugs, poisons, and anything else having a bearing on tropical medicine in the Soudan. A battle against mosquitoes on the lines of Major Ronald Ross's mosquito brigade has been doing good work in Khartoum and the report already tells us of the most likely places in which mosquitoes breed. Quite rightly, the work has not been confined to the destruction of malaria-bearing mosquitoes, but has been universally extended against all gnats, and statistics show that, whereas half the water pools were infected in August and September before the treatment, less than one-sixth of the sites were found to be infected during January after the treatment. Another year's work will probably lead to even more satisfactory results. Mosquito work has not, however, been confined to Khartoum and valuable tables are published showing the kinds of mosquitoes met with at many places on the Blue Nile, White Nile, and Bahr-el-Jebel. The White Nile harbours many more anophelines than the Blue Nile, though the latter also furnishes a good many fever cases in the summer months. There are valuable papers on other biting insects, on parasites injurious to millet, which is the chief cereal food of the Soudanese, and one by Mr Theobald on the Mosquitoes of Egypt, the Soudan, and Abyssinia. Dr. Balfour takes this opportunity of republishing a preliminary note on the diseases of the Soudan and also a paper on Eosinophilia in Bilharziosis and Dracontiasis which has already appeared in THE LANCET of Dec. 12th, 1903, p. 1649. The report is published by the Department of Education of the Soudan Government, is very well printed and bound, and is enriched by several photographs and coloured plates which cannot be too highly praised.

Nov. 16th.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Annual Report of the Health Department of Montreal.

IN issuing the annual report of his department for 1903 the health officer of Montreal states that the recent system of tabulating births and deaths, adopted some months ago, has had a beneficial effect in that the physicians now, in the great majority of cases, report upon these without delay. When the population of Montreal is taken as given by the last census returns finished in April, 1901, at 267,730 inhabitants and the probable increase in population calculated since that time up to the middle of 1903, it will be found that the total mortality for the period is 24·39 per cent. The mean annual death-rate for the past 18 years, leaving out that for 1885, the year when Montreal experienced an epidemic of small-pox, was 24·77 per 1000 of the population, while the rate for 1900 was 23·25 and that for 1902 was 22·58 per 1000. The rate for 1903 was, therefore, 4·56 less than the mean rate for the preceding 18 years, 3·04 per 1000 and 2·37 per 1000 less than in 1901 and 1902 respectively. Amongst the causes of death it was found that there were less deaths from tuberculosis than in preceding years. Before 1900 the average yearly number of deaths stood at 692, in 1901 the number was 647, in 1902 it was 644, while in 1903 it was 633. In 1903 there were two deaths caused by small-pox, or eight less than in 1902; 77 deaths by measles, or seven less than in the preceding year; 24 by scarlet fever, or 40 less than in 1902, 21 less than in 1901, and 108 less than in 1900. Owing to the adoption of the international system in classification of diseases the deaths from diphtheria cannot be properly compared with preceding years as croup is now included in the list. Typhoid fever caused 90 deaths, or four more than in 1902. These deaths from typhoid fever were 40 less than in 1901 and 30 less than in 1900. Bronchitis caused 224 deaths, or six more than in 1902. Pneumonia, including broncho pneumonia, caused 528 deaths, or 16 less than in 1902.

Marriage and Birth-rate in Montreal.

According to tables recently published by the vital statistics department of Montreal the mean birth-rate for the past 16 years in that city without distinction as to nationality was 39·10 per 1000 of the population. The French-Canadian birth-rate was 49·95 per 1000 of their population, that of other Roman Catholics 25·95; and that of Protestants 24·96 per 1000 for the past 16 years. The total birth-rate for 1903 was 39·08 per 1000. The rate for that year amongst French-Canadians was 43·64 per 1000; other Roman Catholics, 30·69; and Protestants, 20·52. The excess of births over deaths numbered 3375 distributed as follows: French-Canadians, 2541; other Roman Catholics, 337; and Protestants, 507. The birth-rate for 1903 is the highest since 1896. The marriage-rate for 1903 was 10·16 per 1000 of the population, giving an increase of 1·18 over the mean rate for the preceding 16 years, or an increase of 0·94 per 1000 over the rate in 1902 and 2·01 over that for 1901. The marriage-rate among the French-Canadians for 1903 was 10·75 per 1000; amongst other Roman Catholics it was 7·35 per 1000; and amongst the Protestants, 10·36 per 1000.

The Consumption of Spirituous and Malt Liquors in Canada.

The reports of the Inland Revenue Department of the Federal Government for the past fiscal year show that the consumption of spirituous and malt liquors is on the increase in Canada. The amounts consumed reached in the case of the former 5,343,954 gallons, and in the case of the latter 27,608,518 gallons. As regards the consumption of spirits in which wines are included, the average consumption is 0·958 gallon per head of the population, said to be the largest consumption per head on record since 1885 when the amount

stood at 1·126 gallons per head. The consumption of beer averages 4·918 gallons per head of population, which is also the largest on record except for the year 1902 when it amounted to 5·102. The average since 1869 was 3·182 gallons per head. The consumption of wines averages about the same from year to year—namely, 0·96 gallon per head. The average quantity of tobacco used annually per head of population has been 2·178 pounds for 35 years. Last year it reached 2·765 pounds per head, the largest on record for any year.

A New General Hospital for Toronto.

The Government of the province of Ontario has promised to contribute $100 000 towards the erection of a new general hospital for Toronto. This is the outcome of earnest solicitation of the authorities of the University of Toronto who desire to have for the medical faculty the very finest facilities for clinical teaching. Mr. Cawthra Mulock of Toronto has also contributed $100,000 for the same purpose, particularly specifying that the money is to be expended for the purpose of a new outdoor department and that every facility shall be afforded for clinical teaching. Then it is understood that the emergency branch will be in receipt of $100,000 from a separate source which will give the trustees and corporation of the Toronto General Hospital an incentive to acquire further donations. It is proposed that a new, modern and up-to-date hospital, the finest in Canada, and rivalling any similar institution in the United States, should be erected at a cost of $750,000, but as yet the matter has not taken definite shape; it is fully expected, however, that within five years the hospital will be completed and will be devoted wholly to the purposes of the medical faculty of the University.

The Enrolment of Students at McGill University.

The enrolment of students for the session of 1904–05 at McGill University, Montreal is 370 in medicine, 297 in arts, 370 in applied science, and 28 in law, making a total in all faculties of 1065. In 1902–03, when the last report was published, the students in medicine numbered 435, in arts 329, in science 286, and in law 40. The total number registered for that session was 1090. The adoption of new regulations governing partial students explains the decrease in the faculty of arts. The decrease in the faculties of medicine and law is probably due to increased standards, while the increase in the faculty of applied science is a splendid testimony of the high standing of this department of McGill University. Lord Strathcona has recently given $50,000 towards the needs of the medical faculty.

The Medical Faculty of the University of Toronto.

The formal opening of the medical faculty of the University of Toronto for the session 1904–05 took place on the evening of Oct. 3rd. Professor Temple delivered the annual address, expressing satisfaction on behalf of his colleagues on the staff who had come from Trinity Medical College that after the first session of the amalgamated faculties everything was working smoothly for the cause of medical education in Toronto. There are at present enrolled between 600 and 700 medical students and the faculty numbers upwards of 70. This year's freshman class reaches 170, the largest ever recorded in the history of Canadian medicine. If this growth continues it will necessitate raising the standard—a question which will anyhow probably be in the arena for discussion. Last summer, for the first time in the history of Toronto medicine, a post-graduate course was held; its success for the future is assured, as the attendance at the first session was all that could be desired. A fifth year course has also been inaugurated and through the generosity of one of the members of the board of trustees of Toronto General Hospital the Dean Reeve scholarship for original research will be continued. A six-year B.A. and M.B. course has also been established.

The Growth of the Canadian Medical Association.

Extracts from the annual report of the general secretary of the Canadian Medical Association, which met in annual session in Vancouver in August last, will show how this association is growing in favour with the profession of medicine all over the Dominion. When it is remembered that thousands of miles often have to be travelled to attend annual meetings it cannot be expected that on any occasion the attendance should be abnormally large, but the steady growth in membership and in attendance at the annual meetings is very gratifying to those who take an active interest each year in its progress. The first decade after the organisation of this association in 1867 shows an average attendance of 71. The second decade from 1877 to 1887 shows an average attendance of 74·8; the third, 107·6; whilst the average attendance for the past seven years is 139·1. At the annual meeting in 1903 there were 303 in attendance, the second largest meeting up to that time, being only exceeded by the meeting in Montreal the previous year, when there were 341 present. The third largest meeting was in Toronto in 1899, when 242 were present. The Toronto meeting of 1899 now ranks fourth, as Vancouver had an attendance of 270, which is remarkable considering that it took many a week to get there. It is very gratifying to record the large attendance at London last year, 303, and especially so in comparison with previous meetings in that city. It was the third time that a meeting had been convened in London, the former occasions being 1880 and 1894. In 1880 the attendance was 60; in 1894 it was 92, so that in 1903 the attendance was five times more than in 1880 and over three times more than in 1894.

Nov. 7th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Pneumonia in New York.

PNEUMONIA is the most prevalent and fatal disease in New York. In the first six months of the current year there were 42,700 deaths from all causes in New York city and of this number 8360, or nearly 20 per cent., were due to pneumonia. In 1903, 9714 persons died from pneumonia. The total death-rate has risen from 18·18 per 1000 in 1903 to 22·33 for the first six months of 1904, acute lung affections being mainly responsible for this increase. The New York City Board of Health has set on foot an investigation into the cause of pneumonia, for the purpose of which $10,000 (£2000) have been appropriated by the city and several prominent physicians, who give their services free, form the commission. The commission met for the first time on the evening of Oct. 18th when Dr. Edward G. Janeway of New York was elected president and Dr. T. Mitchell Prudden of New York secretary. The commission is divided into a clinical committee and a bacteriological committee. The former is composed of Dr. Janeway, Dr. Osler, Dr. Musser, Dr. Billings, and Dr. Holt, and the latter of Dr. Welch, Dr. Prudden, and Dr. Smith. Dr. Biggs will serve on both committees. The investigation is to be thorough and the committees have drawn up a plan of action. This provides for the systematic investigation of the specific cause of pneumonia, the question of its contagiousness, its appearance in the form of an epidemic, and methods of possible prevention and care. The subcommittees and individual investigators will work independently and will report to the New York City Health Department at their discretion.

Sir Felix Semon's Address to the Laryngological Section of the New York Academy of Medicine.

Sir Felix Semon's address delivered before the Laryngological Section of the New York Academy of Medicine[1] was well received, there being present at the meeting throat specialists from all parts of the United States.

Texas Fever in the Philippine Islands.

According to a recent report by Dr. James W. Jobling, director of the Serum Laboratory, and Dr. Paul G. Wooley, assistant director of the Serum Laboratory of the Biological Laboratory in Manila, Texas fever has been introduced into the Philippines. Cattle exported from the United States had been purchased at places 100 or 150 miles north of the Texas-fever line in California, all the animals, with the exception of one heifer, having been raised at the places at which they were bought. The animals were inoculated with fresh blood from native or Chinese cattle and several of them died from Texas fever. In order to discover the origin of the disease it was necessary to find out whether the native or Chinese animals were immune to the disease and whether or not American cattle presumably not immune could be infected by injecting into them the blood from the healthy native or Chinese cattle. Experiments were first tried on Chinese animals, blood containing large quantities of pyroplasmata being

[1] This address was published in full in our issue of Nov. 5th.—ED. L.

injected subcutaneously; the results were negative. The attempt was next made to produce the disease by injecting blood taken from a healthy American animal which had not been immunised by the "simultaneous method" and which showed no parasites into a healthy Chinese one. The result was absolutely negative. Following this blood was taken from healthy animals used for serum purposes and injected subcutaneously into American animals which had not received the "simultaneous method." This series of experiments was positive in two cases and negative in one. The facts adduced as a result of these experiences were, first, that native or Chinese animals could not be infected with Texas fever by subcutaneous inoculation with relatively large quantities of blood containing the living parasites; secondly, that susceptible non-immune American animals would acquire the disease following injections of blood taken from apparently healthy Chinese animals which had been immunised to rinderpest in the Philippine Islands; thirdly, that true Texas fever is being dealt with and not the atypical South African or Rhodesian fever; and, fourthly, that a tick (boophilus Australis), the intermediate host of the parasite of Australian pyroplasmosis, is present in the Philippines. The conclusion arrived at by the investigators, based upon these facts, is that Texas fever is endemic not only in India but also in China, Java, Borneo, C chin China, Singapore, and the Philippine Islands, and that the majority, at least, of all native and Chinese animals are immune to the disease.

Nov. 15th.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

Midwifery Nursing.

AT the last meeting of the Victorian Trained Nurses' Association a discussion took place on midwifery nursing among the poorer classes. It was pointed out that in numerous instances the patients were unable to pay the fee which competent nurses demanded, and the result was that they engaged women of the "Sairey Gamp" class to their misfortune. It had been suggested to meet this difficulty that instead of a nurse being called on to devote the whole of her time in one house she should be allowed to make such arrangements as would enable her to take two or three patients at a time. It had also been suggested that a second-class grade of nurses, who would receive a lower fee, should be established. The meeting came to no conclusion on the subject but decided that it required very careful consideration.

St. John Ambulance Association.

The fourteenth annual report of the St. John Ambulance Association, New South Wales centre, stated that 30 classes for the instruction of first aid and home-nursing, followed by an examination, had been held at places embracing the city and suburbs of Sydney and towns in New South Wales, British New Guinea, and Fiji. The number of those who attended the course of instruction was 656, of whom 454 obtained certificates, and 19 qualified for the medallion. The total number of persons who had attended a full course of ambulance lectures since the establishment of this centre amounted to 9496, of whom 6507 passed their examination and 321 had qualified for medallions by passing the third and final examination.

Fresh Air League.

The fifteenth annual report of the Fresh Air League of New South Wales showed that the efforts of the league had been attended with satisfactory results. During the season 209 persons had been sent to the farm homes; in all, since the commencement of the work in 1891, 2714. The committee expends each season about £500 and it is pointed out in the report that it was still to be desired that further means should be forthcoming, for it would be as well if it could be possible to continue operations in the winter months as well as in the November to April season. It was also urged that another institution was sadly required—namely, a sanatorium for infants, where children could be attended to without the mother being compelled to leave her home and other children.

Hospital Affairs.

The Sumner operating theatre at the Melbourne Hospital has been formally dedicated and opened by the president of the hospital. It is the old operating room renovated, altered, and brought up to date, and is named after the late Hon. T. J. Sumner, under whose will the hospital benefited very largely.—The Queen Victoria Memorial Hospital for Infectious Disease has at last been equipped and opened for the reception of patients suffering from scarlet fever and diphtheria from the Melbourne metropolitan districts.—A deputation from the Sydney Dental and the University Dental Hospitals recently waited on the Chief Secretary to ask him to give approval to the amalgamation of the two institutions. The minister stated that there was a legal objection which could not be surmounted except by legislation and he was not prepared to introduce a Bill to deal with the matter.

Law regarding Removal of Lunatics to Asylums.

The High Court of Australia has delivered a most important judgment regarding the powers of those having charge of lunatics. An action was brought to recover £25,000 from the ex-inspector of police and several constables for alleged wrongful arrest and conveyance to a private lunatic asylum. The plaintiff's case was that he had been taken to an asylum several days after he had lodged an application against an order declaring him insane. He was taken away the day before his application was to have been heard and by more force than was necessary. The defendants applied to the Judge in Lunacy to have the action stayed on the ground that they were protected by the Lunacy Act, having in what was complained of been carrying out the provisions of the Act, they having acted on an order of the wife of the appellant, who had been granted custody of her husband. The Judge in Lunacy stayed the proceedings on that ground, and the full court upheld his decision. The High Court held that the defendants were not protected by the Lunacy Act, their answer to the action being a common law defence. But they decided, as the plaintiff must fail in the end, that his action was vexatious, and, his objection being to the form and not the substance of the matter, the High Court, as a court of final appeal, would not entertain it but would "give such judgment as ought to have been given in the first instance." They therefore, while holding that the Judge in Lunacy and the Supreme Court had acted wrongly in deciding that the defendants had a defence under the Lunacy Act, stayed the action as one in which there could be, on the facts, no relief at common law.

Oct. 22nd.

Obituary.

ACHILLE VINTRAS, M.D. ST. AND., M.R.C.S. ENG.

THE death on Nov. 9th of Dr. Achille Vintras, senior physician and founder of the French Hospital, London, has caused great grief amongst the French colony. He was born in April, 1830, near Caen in Normandy, where he was educated, afterwards studying in Paris, and finally coming to England in the early "fifties." He entered as a medical student at St. Mary's Hospital and had the advantage of the teaching of Lane, Sibson, and Spencer-Smith. He became M.R.C.S. Eng. in 1858, and was elected one of the first house surgeons to St. Mary's Hospital. In the following year he obtained the degree of M.D. St. Andrews; he then started in practice, about 1860, in the neighbourhood of Regent-street, where he had a large French *clientèle* Later he resided in Hanover-square and only left there a few years ago, when he practically retired from the profession.

His best-known contributions to medical literature were "Medical Guide to the Mineral Waters of France and its Wintering Stations" and "Diabetes and its Treatment." He also contributed to various medical journals, both at home and abroad. He was Officier de la Légion d'Honneur and Commandeur de l'Ordre du Lion et du Soleil of Persia. He will always be best remembered, however, as the founder, in 1867, of the French Hospital, where all poor French-speaking foreigners, without distinction of religion or nationality, could obtain medical or surgical relief. The hospital was modest in its beginnings and was situated in Lisle-street, Leicester-square, in the centre of a large French population. In course of time these quarters became

too small for the purpose and a site was acquired in Shaftesbury-avenue, where the present commodious hospital was opened in 1890 by the French Ambassador, the late M. Waddington. It contains 72 beds and has all the modern improvements. Not content with his success he finally succeeded in obtaining sufficient funds to build a convalescent home at Brighton containing 32 beds, an addition to which is in course of erection. Dr. Vintras might well have inscribed on his tombstone the epitaph which is found on that of Sir Christopher Wren—"Si monumentum requiris, circumspice." He had a ready wit and a kindly humour which endeared him to everyone, but to know the real goodness of the man one must have lived in close intimacy with him.

The funeral ceremony at Notre Dame de France in Leicester-place was most impressive and showed the love and affection in which he was held. It was attended by the French Ambassador, *le personnel* of the Embassy, his medical and surgical colleagues, the general committee of the hospital, and *la colonie française*, rich and poor. The burial took place at Brompton Cemetery, where M. Cambon, the French Ambassador, in a few simple and sympathetic words, paid a graceful and touching tribute to his memory.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

TUESDAY, NOV. 22ND.

THE eightieth session of the General Medical Council was opened at the offices of the Council, 299, Oxford-street, London, W., to-day, Sir WILLIAM TURNER, the President, being in the chair.

Members Absent.

The PRESIDENT intimated that two members of the Council would not be present during the present session. Mr. Morris had been called to India and was now on his way there and Mr. Tichborne's condition of health did not permit his attendance.

New Members.

A letter was read from the Acting Registrar of the University of Oxford intimating that the University had appointed Mr. Arthur Thomson, M.A. Oxon., M.B. Edin., Professor of Human Anatomy at Oxford, to be a member for five years from June 21st, 1904.

Professor Thomson was formally introduced to the Council by Dr. MACALISTER and took his seat.

A letter was read from the Pro-Chancellor and Chairman of the Council of the University of Leeds to the effect that the University had appointed Mr. Alfred George Barrs, M.D. Edin., F.R.C.P. Lond., to be a member for three years from Oct. 19th, 1904.

Mr. YOUNG introduced Dr. Barrs who then took his seat at the table.

Sir William Turner's Address: Resignation of the President.

The PRESIDENT in opening the session said:—During the recess some changes have taken place in the *personnel* of the representatives chosen by the medical authorities to sit on the Council. Dr. Payne, who completed in June last the period of five years for which he was chosen by the University of Oxford, is no longer one of our members. His colleagues on the Council showed their appreciation of his cultured mind and business qualifications by electing him on three of its most important committees—the Pharmacopœia, the Executive, and the Examination Committees. As a member of the Pharmacopœia Committee, his services in connexion with the formation and arrangement of the excellent library bearing on its work which the Council has now acquired are greatly valued. I feel that I am in harmony with the sentiments of my colleagues in expressing to Dr. Payne the esteem which we entertained for him as a member of this Council. The University of Oxford has chosen as its representative Professor Arthur Thomson of the chair of human anatomy. As a former pupil and from his association with me for some years in teaching anatomy in the University of Edinburgh, I desire to congratulate Professor Thomson on being selected to represent the ancient University in which he now fills so important a chair. In the business of this Council, abundant opportunities will be afforded for the exercise of the energy and activity of mind which I know that he possesses. On April 25th of this year His Majesty the King granted a Royal Charter which instituted in the city of Leeds a university of the name and style of the University of Leeds. Power was given to the University to grant and to confer degrees and other academic distinctions to and on persons who shall have pursued an approved course of study in the University and shall have passed the examinations of the University. By an Act of Parliament which obtained the Royal Assent on June 24th, the qualifying examinations in medicine, surgery and midwifery of the University of Leeds were authorised to be registered under the Medical Acts, as if the University had been a university of the United Kingdom legally qualified at the passing of the Medical Act, 1886, to grant diplomas in medicine and surgery. Also the Council of the University of Leeds was entitled to choose one representative to be a member of the General Medical Council. We have received official information that Dr. A. G. Barrs has been chosen by the Council of the University and we welcome him to-day as the representative of the youngest of the universities of the United Kingdom.

I may remind the Council that on May 30th the following resolution was carried:—

That the Lord President of the Privy Council be requested to introduce into Parliament a Bill to confer upon the General Medical Council statutory powers to establish and maintain registers of medical and dental students and to impose a fee not exceeding £1 for registration therein.

On the following day I communicated this resolution to the clerk of the Privy Council. Mr. Almeric FitzRoy, in a letter dated Nov. 1st, informs me that communications on the subject have been received from the Presidents of the Royal Colleges of Physicians of London and Surgeons of England, and he suggests that in the circumstances it might be expedient for the General Medical Council to confer with the Colleges with a view to the preparation of a scheme providing for their coöperation towards the desired end on a basis that would, in some form or other, recognise existing rights. Copies of the correspondence will be laid before the Council, and I have no doubt that the suggestion of the Lord President will receive most careful consideration during the present session. In a subsequent communication Mr. FitzRoy inclosed a copy of a letter from the Vice-Chancellor of the University of Oxford who requests the Lord President, before the introduction of any Bill intended to give effect to the resolution concerning the registration of medical and dental students, to afford the Council of that University an opportunity of becoming acquainted with its provisions and of expressing its views thereon. On the conclusion of the business of the Council on May 31st, I forwarded to the Lord President copies of the judgments in the cases of O'Duffy *v.* Jaffe, and the King (Rowell) *v.* Registrar of Joint Stock Companies, together with the resolutions of the General Medical Council thereon. The Lord President has, in reply, informed us that my letter was referred by him to the Board of Trade for consideration, and he communicates the opinions on the points raised which the Board has received from its legal advisers. The Lord President's letter will appear on our programme of business. I may also state that, as bearing on the question of companies carrying on medical and dental practice, Sir John Batty Tuke will submit for consideration a Parliamentary return obtained at his instance. Sir Victor Horsley has given notice of an important motion for the appointment of a committee to inquire into the working of the Anatomy Acts as regards the teaching of anatomy and surgery. A communication bearing on this question has been received from the War Office which will be brought before the Council and will, I trust, receive its careful consideration. During our sitting in May the question of the disposal of the site in Oxford-street occupied by the Council's office was under consideration, as well as the arrangements to be made in connexion with our property in Hanover-square. On both these topics I shall have to make a communication to the Council *in camerâ*. Several questions of educational interest have been remitted to the Education Committee for consideration and report. Sir John Batty Tuke having resigned the office of chairman, which he held for a number of years, the report of the committee will be presented by Dr. Windle. The Examination Committee will have before it reports of the visitors and inspector on the final examinations of the universities in

Scotland with the observations of the universities thereon, also a report by the surgical examiners appointed by the Council on the final examination of the Apothecaries' Hall of Ireland. Sir Patrick Heron Watson is now the chairman of this committee. The Pharmacopœia, Dental Education and Examination, and Public Health Committees will also present reports on matters appertaining to their respective departments, and the Committee on Preliminary Scientific Education and Examination will report on the existing courses of study in the branches of elementary biology. Cases of a penal and disciplinary nature which affect the moral character of several medical practitioners will be the subject of inquiry during the week.

When by the Medical Act, 1862, the General Medical Council became a corporate body, with the right to have and to use a common seal, the President, at that time Mr. Joseph Henry Green, was requested to propose to the Council a design for the seal. The one selected bore in the centre the figure of Hygeia, the goddess of Health, robed and holding the serpent and cup, whilst on one side of the goddess was the device of a roll of parchment and on the other of a mace. The parchment roll may be held to typify our Acts of Parliament, the issue of the successive editions of the British Pharmacopœia, the voluminous reports on educational and other topics which have come within the purview of the Council, and the 41 published volumes of the Minutes of our Proceedings. But the mace, emblematic of ceremonial dignity and of authority, has, up to this time, been no more than a device on paper. I am desirous, gentlemen, of giving to this emblem objective form and I ask to be allowed to offer for the acceptance of the Council an example which, in its design, expresses our identification with the great profession of medicine and our place as the administrative body representative of the three divisions of the United Kingdom. On Dec. 3rd, 1901, you re-elected me President of the Council for a further period of five years, provided that I remained a member of the Council. Although my appointment as representative of the University of Edinburgh does not expire until December, 1906, I have formed the opinion, after giving the subject mature consideration, that the time has come when it is advisable that I should retire from the Presidentship of the Council. I have to bear in mind that my duties in Edinburgh as principal of the University are of an onerous and absorbing nature and have the first call on my time and energy. Through your favour and confidence, gentlemen, for which I cannot too strongly express my grateful acknowledgment, I have occupied this chair during six years; but for some months past I have become conscious of the fact that, having entered upon the stage of life which entitles one to be called a septuagenarian, the vital mechanism cannot be driven at the speed, and with the continuity of effort, which was both possible and pleasurable a few years ago. The business of the Council is ever on the increase and from the strain to which one is subjected when the Council is sitting and the bulky correspondence to be attended to during the interval between the sessions I have come to the conclusion that I ought no longer to retain the presidential chair, as I feel that I should not be able to continue to discharge efficiently the duties of the responsible office to the satisfaction either of myself or my colleagues. I have to request you, therefore, gentlemen, to arrange for the appointment of my successor before the Council rises at the end of the present session.

On the motion of Dr. MACALISTER the President was formally thanked for his address which was ordered to be entered on the minutes.

Dr. PYE-SMITH: I have been asked since I came into this room to propose another vote which I think the Council will forgive me for introducing. It is to express our thanks for the noble present which our friend the President has made to the Council in this which I am sorry to find from him is to be the last session of his presidency. He will leave behind him a memory which, I am sure, will be pleasant to him to think upon and I may assure him of what he knows so well—namely, that he enjoys the absolute respect and esteem and, I think I may add, the affection of every member of the Council. He has thought fit to mark the termination of his official relations—I am quite sure only his official relations—by presenting us with that glittering bauble which we see before us, an emblem of corporate dignity and authority, and one which expresses in its ornaments the admirable facts which are connected closely with this Council. The first is that we are in the service of the commonweal from the point of view of medicine. In our hands is placed the honour of the profession and we esteem it at once a duty and a very responsible duty indeed for us to perform. But an incidental advantage is also symbolised by this mace—namely, that by necessity we include among our members representatives of the three united kingdoms, and therefore, as the President has very gracefully and truly remarked, the Council forms a close bond of union between the various parts of this great kingdom, and I am sure, speaking as one of the representatives of the Kingdom of England, it is to us one of the greatest pleasures of the meetings of this Council that we have the opportunities of meeting our brethren in the profession in Scotland and sometimes even in Wales also. I am sure we shall regard the continuance of these meetings as most valuable; first, because of the traditions which the Council carries with it, traditions which go back to Benjamin Brodie and a long line of distinguished men and to yourself, Mr. President, at least equal in distinction; and, secondly, for the opportunities which are given for meeting one another and working together for the good of our common profession. I move that our best thanks be given to the retiring President for his munificent gift.

Mr. TOMES seconded the motion which was carried.

The Council then proceeded to the business on the programme.

Army and Navy Examination Returns.

Sir PATRICK HERON WATSON moved that the following yearly tables for 1904 be received: Table showing results of competition held on May 16th, 1904, for commissions in the medical staff of the Royal Navy; and table showing results of competition held in July, 1904, for commissions in the Army Medical Service.

Dr. MCVAIL seconded the motion which was agreed to.

Sir PATRICK HERON WATSON moved—

That the thanks of the Council be conveyed to the Director-General of the medical department of the Royal Navy and the Director-General of the Army Medical Service, respectively, for the returns which they have again furnished to the Council, with the request that these returns may in the future continue to be furnished to the General Medical Council.

Dr. MCVAIL seconded the motion which was adopted.

Mr. BROWN said he wished to propose that those returns be referred to the Examination Committee for consideration and report. Since the last meeting of the Council he had attended the annual meeting of the Fellows and Members of the Royal College of Surgeons of England and in their hands on that occasion was placed the annual report of the Council of the College. He found therein references to the returns.

Sir W. THOMSON pointed out that large questions would be raised if Mr. Brown were to go into details.

Mr. BROWN said he would be contented with a motion that the returns along with an extract from the recently issued annual report of the Royal College of Surgeons of 1904 be referred to the Examination Committee for consideration and report.

The PRESIDENT said they knew nothing about the extract. They knew about the returns which were before them.

Mr. BROWN admitted the force of the President's remarks. He would be pleased to submit the extract to the Examination Committee for what it was worth.

Dr. MCVAIL did not see why any document should be sent to the Examination Committee before the Council had heard it read.

The PRESIDENT ruled that Mr. Brown was within his power.

Mr. BROWN agreed to take out of his motion all reference to the document, confining the remit to the returns.

In reply to Dr. LINDSAY STEVEN, who asked if it were within the scope of the Council to deal with this question,

The PRESIDENT said the returns had a certain reference to qualifying examinations in medicine. He might go back to the first or second year that he was a member of the Council, when the very eminent Dr. Parkes sat at the Council. It was through the instrumentality of Dr. Parkes, if he remembered rightly, that those returns began to be presented to the Council from the important national examining bodies. Undoubtedly they were of great importance at the time, so that he was inclined to answer the question that had been addressed to him by saying that they had undoubtedly a certain bearing on qualifying examinations.

Mr. JACKSON seconded the motion.

Dr. NORMAN MOORE thought that if the motion were to be approved some explanation should be given.

Dr. BRUCE said the mere fact of the President saying that the documents had a bearing on the examinations showed that the matter should not require discussion but should go to the committee.

Dr. MCVAIL said he understood that Mr. Brown was referring to a document part of which appeared recently in the medical press. He wanted to know, however, what the committee was to consider. He regarded the document which was published as extremely important and one to which the Council ought to give its attention.

Sir W. THOMSON did not consider the occasion opportune for opening up the whole subject. Let them hear from the Examination Committee and the Council would have some material on which to come to a decision. He objected to collateral evidence being brought forward. Mr. Brown could furnish all the evidence he cared to before the committee.

After further discussion as to the advisability of remitting the question, in which Sir PATRICK HERON WATSON and Sir JOHN BATTY TUKE took part,

Mr. BROWN said he had proposed his motion because he felt it was their duty to go into the returns and see what they really meant instead of leaving future generations to discover their significance. He was told that the matter had been brought forward that day specially because the thing had been taken out of his hands and commented on by THE LANCET and the *British Medical Journal* and taken notice of by the Royal College of Surgeons of England in its annual report. It was quoted by the College apparently as a reason why its diplomas and examinations should be regarded as something superior to anything else of the kind.

Sir W. THOMSON submitted as a point of order that Mr. Brown was not entitled to open up new topics in his reply. He knew what the extract was and if any portion was to be read the whole of it must be read and debated.

The PRESIDENT ruled that the question ought not to be debated at this stage. An opportunity, he said, would be given when the report of the committee came up for consideration.

Mr. BROWN regretted that he was debarred from referring to this document which he admitted was an outside document. He was not intending to mention the name of any other corporation and no other name would have been mentioned if he had been allowed to state the figure which the Royal College of Surgeons of England mentioned as the percentage of candidates passed from its body as compared with all the other bodies of the United Kingdom. He proposed his motion and asked them to look at the programme of business where they would see three candidates from the Conjoint Board of Ireland.

The PRESIDENT: Now, you are really debating.

Mr. BROWN: I was simply replying to Dr. McVail who will see ample reason why this matter should be referred.

A division was taken when the motion to remit the returns to the Examination Committee was carried by 14 votes to 5.

Dr. MCVAIL asked whether it would be in order to appoint Mr. Brown a member of the committee during the consideration of this matter.

The PRESIDENT pointed out that members of the Examination Committee were nominated by the respective branch councils under a standing order. He thought, however, that Dr. McVail might gain his point by moving that the Examination Committee should be requested to confer with Mr. Brown.

Dr. MCVAIL moved in accordance with the suggestion of the President and Sir VICTOR HORSLEY having seconded the motion it was agreed to.

Dental Business.

Dr. MACALISTER moved that the following report of the Executive Committee on dental business should be received and entered on the minutes:—

The prescribed conditions having been duly fulfilled in each case, the names of the undermentioned persons have been restored to the Dentists Register, from which they had been erased in conformity with the provisions of Section 12 of the Dentists Act, 1878: John Streets Acton, Russell T. Barter, Henry Hill, Henry N. Hindley, William Holmes, John J. Holroyd, John W. Martin, Frank Parsons, George E. Rogers, Joseph D. S. Shepherd, Nathan Smith, Seymour W. N. Swales, Charles H. Veo, Robert J. Westworth.

An application from the Dental Board of Victoria for the recognition of its diploma was received and referred to the Dental Education and Examination Committee for consideration and report during the present session.

Two former applications have been made by this Board to a similar effect, one in 1900 and a second in March, 1904, both of which, after consideration, were refused.

The Registrar presented a copy of an Act passed in January, 1904, by the States of Jersey for the regulation of the registration of dentists in the bailiwick, which was referred to the Dental Education and Examination Committee.

The committee received from the Privy Council an answer to a letter from the President transmitting the resolutions adopted by the General Council on May 31st, 1904, respecting companies for the practice of dentistry and also a Parliamentary return which had been obtained by Sir John Tuke in regard to similar medical and dental companies and resolved:—

"That this communication and Sir John Tuke's return be remitted to the Medical Companies Bill Committee for consideration and report to the General Council during the present session and that it be recommended that Sir Charles Ball be added to the committee."

Dr. NORMAN MOORE seconded the motion which was agreed to.

Medical Students as Pupils.

Mr. JACKSON asked the President whether the Council had indicated what meaning was to be attached to the phrase "the proper training and instruction of *bonâ-fide* medical students as pupils," occurring in the notice regarding the employment of unqualified persons as assistants or otherwise, issued on Nov. 24th, 1897. He said it had come to his knowledge that in certain districts, especially in the north of England, there were several towns in which gentlemen were acting as unqualified assistants and posing as pupils. If any objection was taken it was said: "Oh, he is my pupil." In one instance it appeared that a man had been an unqualified assistant under the guise of being a pupil for the last 35 years, and in the same practice, though not necessarily under the same man. He was employed in a colliery district where he was treating the people, the excuse being that he was a pupil.

The PRESIDENT: The answer that I have before me is as follows: The phrase in question—namely, "the proper training and instruction of *bonâ-fide* medical students as pupils"—has reference to the resolution of the Council passed on May 29th, 1893, regarding the employment of the fifth year of the medical curriculum. I ask your attention to that. The resolution in question is as follows:

The fifth year should be devoted to clinical work at one or more public hospitals or dispensaries, British or foreign, recognised by any of the medical authorities mentioned in Schedule A of the Medical Act, 1858, provided that of this year six months may be passed as a pupil to a registered practitioner possessing such opportunities of imparting practical knowledge as shall be satisfactory to the medical authorities.

Should the question of the interpretation of the phrase, "*bonâ-fide* medical students as pupils," arise in a case of alleged covering it would rest with the person accused to prove that the assistant employed was in fact a *bonâ-fide* medical student undergoing training and instruction in connexion with his fifth year of medical study. That is the view which I entertain regarding this question and therefore all such cases as you refer to of a person acting for over 30 years as an assistant, or for a smaller number of years than 30, are excluded and do not come within the range of the Council's resolution at all. They are cases of covering. They are not cases of a *bonâ fide* medical student receiving proper training and instruction in the sense of the Council's resolution.

Mr. JACKSON: That does not seem to be generally known.

The PRESIDENT: It will be, as it will be in our minutes and I presume it will be reported.

Penal Cases.

The Council then proceeded to the consideration of penal cases of which five are set down for hearing.

New Member of Executive Committee.

Mr. Young was elected to the Executive Committee as a member for England, in room of Dr. Payne.

The Anatomy Act.

The Council having sat *in camerâ*,

The PRESIDENT afterwards announced that the Council had appointed a representative committee to inquire into the effect of the provisions of the Anatomy Act and other statutes upon the teaching of anatomy and of practical or operative surgery in England and Scotland.

The Council then adjourned.

WEDNESDAY, NOV. 23RD.

The Council resumed this afternoon, Sir WILLIAM TURNER, the President, being in the chair.

SMOKE NUISANCE.—At Worship-street police-court last week the Great Eastern Railway Company was fined £26 and 39*s.* costs in respect of nine summonses issued in consequence of nine engines having emitted black smoke. The nuisance was from passenger trains running through the densely crowded district from Bishopsgate to Bethnal Green.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—H. Archer (Sections I. and II.), Leeds; H. H. R. Bayley (Section I.), Charing Cross Hospital; H. R. Grellet (Section I.), Guy's Hospital; E. R. Neukirch, Copenhagen; E. H. Price (Sections I. and II.), Birmingham and St. Mary's Hospital; and J. H. Wolfe (Sections I. and II.), London Hospital.

Medicine.—H. Archer (Sections I. and II.), Leeds; H. H. R. Bayley (Sections I and II.), Charing Cross Hospital; E. F. Hoare (Sections I. and II.), Liverpool; H. M. Jones (Section I.), Royal Free Hospital; A. R. Paterson, Calcutta; H. M. Waller, St. Bartholomew's Hospital; and J. H. Wolfe (Sections I. and II.), London Hospital.

Forensic medicine.—H. Archer, Leeds; H. H. R. Bayley, Charing Cross Hospital; A. Bernfeld, Royal Free Hospital; A. R. Paterson, Calcutta; T. R. Roberts, London Hospital; C. A. Sampson, Charing Cross Hospital; and J. H. Wolfe, London Hospital.

Midwifery.—J. A. Davies, Manchester; G. P. K. Grey, Middlesex Hospital; E. F. Hoare, Liverpool; M. C. Vivian, Royal Free Hospital; and J. J. Winn, London Hospital.

The diploma of the society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—H. Archer, E. F. Hoare, E. R. Neukirch, and E. H. Price.

TRINITY COLLEGE, DUBLIN.—At the final examination in medicine held in Michaelmas term the following were successful:—

Section A.—Ralph S. Oldham, John du P. Langrishe, John C. P. Beatty, Francis R. Coppinger, John W. Tomb, Robert B. Jackson, Thomas O. Graham, Thomas H. Peyton, Francis O'B. Ellison, Thomas J. Cobbe, Henry D. Drennan, Edward Gibbon, Michael P. Leahy, Thomas L. de Courcey, Joseph H. Elliott, Dudley F. Torrens, Basil G. Brooke, Daniel M. Corbett, Reginald Holmes, John Murdoch, James E. M'Farlane, Ernest D. Caddell, Francis Casement, Joseph P. R. Poch, George E. G. Vickery, and Joseph C. A. Ridgway.

FOREIGN UNIVERSITY INTELLIGENCE.—*Cologne* (*Academy for Practical Medicine*): Professor Aschaffenburg of Halle has been offered the chair of Psychiatry together with the post of Director of the Lindenburg Asylum.—*Cracow:* Dr. Stanislaus Maziarski has been promoted to an Extraordinary Professorship of Histology. Dr. Stephan Horoszkiewicz has been recognised as *privat-docent* of Forensic Medicine.—*Innsbruck:* Dr. F. Tangl of Budapest has been appointed Professor of Physiology in succession to Dr. Zoth.—*Kiel:* Dr. Rössle has been recognised as *privat-docent* of Pathological Anatomy.—*Leipsic:* Dr. Heinecke has been recognised as *privat-docent* of Surgery.—*Lyons:* Dr. Augagneur has been transferred at his own request from the chair of External Pathology to that of Clinical Dermatology, in succession to the late Professor Gailleton.—*Marburg:* Dr. Walter Straub of Leipsic has been offered the chair of Pharmacology vacated by Dr. Hans Meyer who goes to Vienna.—*Munich:* The new University Clinic for Mental Diseases has just been opened. It will accommodate 100 patients and the lecture room is arranged for 200 students.—*Münster:* It is proposed to establish a preliminary School of Medicine where medical students can pass the first five semesters of their course. Münster does not rank as a university but only as an academy. It has only two faculties, Theology (Roman) and Philosophy.—*Paris:* Dr. Reclus has been appointed to the chair of Clinical Surgery vacant by the death of Professor Tillaux.—*Prague* (*German University*): The late Dr. Huppert, Professor of Medical Chemistry, left 30,000 kronen (about £1250) to found scholarships for medical students. Dr. Edmund Hoke has been recognised as *privat-docent* of Medicine and Dr. Hermann Ulbrich as *privat-docent* of Ophthalmology.—*Würzburg:* Dr. Peter of Breslau has been offered the post of Prosector to the Anatomical Institute.

BRIDGWATER INFIRMARY.—The ninety-first annual meeting of the subscribers of this institution was held on Nov. 15th, when it was reported that during the past year 430 in-patients and 1003 out-patients had been treated. The financial report showed an adverse balance of £398. The honorary medical staff was re-elected and the Hon. E. W. Portman was elected president.

ELEPHANT REMAINS IN DORSETSHIRE.—An interesting description of elephant remains discovered in a pit at Dewlish, Dorset, has been given by the Rev. O. Fisher. The site in which the remains were found is a narrow trench 12 feet deep and filled with fine dust-like sand. Mr. Fisher found a difficulty in explaining how it happened that so many elephants fell into the pit and suggested that man may have had something to do with the matter, although there is no conclusive evidence to show that man existed at the time when the elephas meridionalis was in this part of the world.

ELECTRICITY AT LARGE.—Some singular scenes were witnessed in Cornwall-street, Plymouth, on Nov. 18th, resulting from an escape of electric current which gave shocks to horses as they passed over the electrified area, and eventually the vehicular traffic had to be diverted to other streets till the fault could be repaired.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST.—A member of the council of management of the Royal Hospital for Diseases of the Chest, City-road, has generously promised a contribution of £2000 towards the fund now being raised for the building of a nurses' home and sanitary tower in connexion with the hospital upon the condition that the additional £3000 which are necessary to meet the cost of the work are subscribed by June 30th next.

INCORPORATED MEDICAL PRACTITIONERS' ASSOCIATION.—At the meeting of the council of this association held on Nov. 16th the following motion was unanimously passed:—

That in the opinion of this council the proposed measure for the State registration of nurses is calculated to be of injury to the public without compensating advantages, as its tendency would be to encourage the practice of medicine and surgery by unqualified persons, and the council pledges itself to use its best endeavours to prevent the passage of the measure through Parliament.

MILK-SUPPLY IN TOWNS.—Dr. Edmund Cautley will read a paper on the Management of the Milk-supply in Towns at a special meeting of the council of the Charity Organisation Society to be held on Monday, Nov. 28th, at 4.30 P.M., at the Royal United Service Institution, Whitehall, S.W. Mr. E. W. Brabrook, C.B., will occupy the chair. Any communications on the matter should be made to Mr. C. S. Loch, secretary of the Charity Organisation Society, 15, Buckingham-street, Strand, London, W.C.

NATIONAL DENTAL HOSPITAL.—The past and present students of the National Dental Hospital and College and their friends held the students' annual dinner on Nov. 19th at the Trocadéro Restaurant, Piccadilly-circus, London, W. Mr. Andrew Clark was in the chair and in proposing the loyal toasts drew special attention to the honour accorded to the hospital by the fact that the Prince of Wales was President of the institution. In submitting the toast of "The National Dental Hospital and College" the chairman narrated how in the course of preparing some notes for his speech he had found in his bookcase a work written by his grandfather, who was a dentist, in which there was a paragraph complaining of quackery at that time and objecting to the reprehensible conduct of certain unscrupulous practitioners. That showed, he said, that in those days unqualified practice was as common as now. The chairman then described how dental practitioners presented a petition to the Royal College of Surgeons of England to obtain a charter to confer the qualification of L.D.S. He alluded to the benefits derived from the association of dentists with the Royal College of Surgeons of England and showed how necessary it was for dentists to receive instruction in medicine and surgery. He commented with satisfaction on the fact that the Government and the public at large were evidently beginning to realise the importance of good teeth. He particularly emphasised the need of recognising that a serious cause of bad teeth was undoubtedly the improper feeding of children. He was glad to notice that in many schools the wise precaution was taken of having the teeth of the pupils examined as a matter of course periodically. The toast was replied to by the dean of the College, Mr. P. S. Spokes, who contended that the hospital was truly a national institution because it attracted students from all parts of the world. He paid a high tribute of praise to the members of the staff of the National Dental Hospital and observed that the excellent training given to the students had borne good fruit. Professor A. S. Underwood, teacher of dental surgery at King's College, then proposed the toast of "The Past and Present Students" which was duly acknowledged by Mr. S. F. Rose and by Mr. E. W. Cooke. The next toast to be honoured was that of "The Visitors," proposed by Mr. Harry Rose, the lecturer on dental mechanics at the National Dental Hospital. Dr. H. R. Spencer replied to this and he was followed by Mr. K. W. Goadby who gave the toast of "The Health of the Chairman." Mr. Clark briefly responded and the company then separated.

UNIVERSITY OF OXFORD.—Arthur Edwin Boycott, D.M., Fellow of Brasenose College, Gordon Lecturer in Experimental Pathology at Guy's Hospital, has been appointed Assistant Bacteriologist at the Lister Institute of Preventive Medicine.—On the question of exemption from Greek, the statute whereby it is proposed to release candidates who offer themselves for the Final Honour School of Mathematics or of Natural Science from examination in the Greek language in Responsions and to substitute an examination in either the French or the German language and in a subject in Mathematics or in Natural Science will be promulgated in a Congregation of the University on Tuesday, Nov. 29th.—The President and Fellows of Magdalen College have offered the following grants to the University: (1) A grant of £250 per annum for each of the years 1904 and 1905 for the purpose of payment of scientific assistants at the University museum; (2) a similar grant of £250 per annum for each of the years 1904 and 1905 to the Bodleian library for the purpose of increase of staff. And the College proposes, if possible, to make provision for the continuance of these grants in the future.—One of the Rhodes trustees, Mr. Alfred Beit, has announced his intention of endowing a professorship, lectureships, and an annual prize essay to encourage and to provide for the study and teaching of British colonial history in the University.—William Osler, M.D., F.R.S., Regius professor of medicine, has been elected a Student of Christ Church.

DONATIONS AND BEQUESTS.—By the will of Mr. Charles Read the General Hospital, Birmingham, will receive £1250 for the endowment of beds dedicated to the memory of the testator and his wife. Under the same will the Queen's Hospital, Birmingham, will receive £1250 for a similar purpose and the Children's Hospital, Birmingham, will benefit by the sum of £1000.—Mr. Thomas Abbey Smithson has by his will left £500 to the Hull Royal Infirmary, £200 to the Hull Dispensary, and a like sum to the Victoria Hospital for Children, Hull.—The Royal Dental Hospital of London, Leicester-square, has received a legacy of £500, bequeathed by the late Mr. George Willis Penson, formerly and for many years a trustee of the charity.—Under the will of Mr. Charles Perceval Rowley of Huntingdon and London £100 are bequeathed to the County Hospital at Huntingdon.—The East London Hospital for Children and Dispensary for Women, Shadwell, E., has received a grant of £3000 from the executors of the late Mr. Arthur Ocran Crooke for maintaining a ward in the new building now in course of erection. The executors of Mr. Crooke have also made a donation of £1000 to the Charing-cross Hospital Convalescent Home for the endowment of a bed, the first to be endowed in the Home.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta-street, Covent-garden, W.C.

The Problem of the Milk-Supply. By F. Lawson Dodd, M.R.C.S., L.R.C.P., L.D.S. Eng., D.P.H. Lond. Price 1s. 6d. net.

DEPARTMENT OF EDUCATION, Sudan Government, Khartoum.

First Report of the Wellcome Research Laboratories at the Gordon Memorial College, Khartoum. By the Director, Andrew Balfour, M.D., B.Sc., M.R.C.P. Edin., D.P.H. Camb., Fellow of the Royal Institute of Public Health, Member of the Epidemiological Society, Medical Officer of Health, Khartoum, and Sanitary Adviser to the Sudan Civil Medical Department. Price not stated.

GAY AND BIRD, London.

The Art of Choosing a Husband. By Paolo Mantegazza, Author of "The Art of Taking a Wife." Translated from the Italian by Gabriel Claude Charton. Price not stated.

GEDDES AND CO., Outlook Tower, Edinburgh, and 5, Old Queen-street, Westminster.

City Development: A Study of Parks, Gardens, and Culture-Institutes. A Report to the Carnegie Dunfermline Trust. By Patrick Geddes, Professor of Botany, Univ. Coll., Dundee (St. Andrew's University), President of the Edinburgh School of Sociology. With Plan, Perspective, and 136 illustrations. Price 21s. net.

GLAISHER, HENRY J., 57, Wigmore-street, Cavendish-square, W.

X Rays: Their Employment in Cancer and Other Diseases. By Richard J. Cowen, L.R.C.S.I., L.R.C.P.I., &c., Member of the British Electro-Therapeutic Association. Price 2s. 6d. net.

GREEN, WILLIAM, AND SONS, Edinburgh.

Manual of Antenatal Pathology and Hygiene. The Embryo. By J. W. Ballantyne, M.D., F.R.C.P.E., F.R.S. Edin., Lecturer on Midwifery and Gynecology, Medical College for Women, and Surgeons' Hall, Edinburgh. Price 21s. net.

IMPRIMERIE OSMANIÉ, Constantinople.

Annales Médicales et Bulletin de Statistique de l'Hôpital d'Enfants Hamidié. Publié au Jour Anniversaire de l'Avènement au Trône de S.M.I. le Sultan. Sous la Direction du Médecin en Chef, en Collaboration avec les Médecins de l'Hôpital. Sixième Année. (Printed mainly in Turkish and French.) Price not stated.

J. B. LIPPINCOTT COMPANY, 5, Henrietta-street, Covent Garden, W.C.

International Clinics. Edited by A. O. J. Kelly, A.M., M.D., Philadelphia, U.S.A., with collaboration. Volume III. Fourteenth Series, 1904.

Orthodontia and Orthopædia of the Face. By Victor Hugo Jackson, M.D., D.D.S., Member of the National Dental Association, Professor of Orthodontia in the Dental Department of the University of Buffalo. Price 21s. net.

MURRAY, JOHN, 50A, Albemarle-street, W.

Lectures on Physiology. Published under the Authority of the University of London. Second series. Bio-chemistry of Muscle and Nerve. Ten lectures delivered by W. D. Halliburton, M.D., F.R.S., Professor of Physiology, King's College, London. Price 7s. 6d. net.

OLIPHANT, ANDERSON, AND FERRIER, 21, Paternoster-square, London, E.C.

The Origin and Nature of Man. By S. B. G. McKinney, M.A., L.R.C.P. Edin. Part III. Evolution (Organic). Price 6d. net.

OLIVER AND BOYD, Edinburgh.

The Transactions of the Edinburgh Obstetrical Society. Vol. XXIX. Session 1903-1904. Price not stated.

NEW SYDENHAM SOCIETY, THE, London. (Agent: H. K. LEWIS, 136, Gower-street, W.C.)

An Atlas of Illustrations of Clinical Medicine, Surgery, and Pathology. Compiled for the New Sydenham Society. (A Continuation of the "Atlas of Pathology.") Fasciculus XIX. (Double Fasciculus). Being X. and XI. of the Clinical Atlas. Illustrations of Herpetiform Morphœa. Plates CXXVI. to CXXXIV. (coloured), and A to J (without colour). Radiographs illustrating Colles' Fracture. Plates K to S (without colour). Price to non-members, one guinea.

Fasciculus XX. Being XII. of the Clinical Atlas. Miscellaneous Plates A to K. Radiographs illustrating Fractures and Dislocations. Plates L to Z. Price to non-members, one guinea.

STUBER, A. (C. KABITZSCH), Würzburg.

Diätetisches Kochbuch. Von Dr. Otto Dornblüth, Nervenarzt und Besitzer eines Sanatoriums in Frankfurt a.M. Zweite, völlig umgearbeitete Auflage. Price, bound, M.5.40.

VOGEL, F. C. W., Leipzig.

Lehrbuch der Arzneimittellehre und Arzneiverordnungslehre Unter besonderer Berücksichtigung der Deutschen und Oesterreichischen Pharmakopoe. Von Dr. H. v. Tappeiner, Ord. Professor der Pharmakologie und Vorstand des Pharmakologischen Instituts der Universität München. Fünfte neu bearbeitete Auflage. Price M.7.

Pathologische Physiologie. Ein Lehrbuch für Studierende und Aerzte. Von Dr. Ludolf Krehl, O. Professor und Direktor der Medizinischen Klinik in Strassburg. Dritte neu bearbeitete Auflage. Price M.15.

Spezielle Diagnose der Inneren Krankheiten. Ein Hanbuch für Aerzte und Studierende. Nach vorlesungen bearbeitete von Dr. Wilhelm v. Leube, Professor der Medizinischen Klinik und Oberarzt am Juliusspital in Würzburg. I. Band. Siebente neu bearbeitete Auflage. Price M.13.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

EDGEWORTH, FRANCIS HENRY, M.B., B.C. Cantab., D.Sc. Lond., has been appointed Professor of Medicine in University College, Bristol.

HOUSE, F. W., M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer for Katanning, West Australia.

JOYNES, FRANCIS JAMES, M.R.C.S., L.S.A., has been appointed Medical Officer of Health for the Dursley (Gloucestershire) Rural District Council.

MAGAREY, FRANK WILLIAM ASTLEY, M.D. Syd., has been appointed Honorary Assistant Surgeon at the Adelaide Hospital, South Australia.

MOSS, MATTHEW KASNER, M.B., B.S. Melb., has been appointed Junior Resident Medical Officer, Perth Public Hospital, West Australia.

OGDEN, OGDEN WATSON, M.D., B.S. Durh., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Honorary Physician to the Hospital for Sick Children, Newcastle-upon-Tyne.

PARKER, CHARLES, M.B., Ch.M. Edin., has been appointed ex-officio Member of the Board of Management of the Launceston General Hospital, Tasmania.

PIGEON, HUGH WALTER, M.D., M.S. McGill Univ., has been appointed Public Vaccinator, Chatham Islands, New Zealand.

SAUNDERS, G. J., M.B., B.S. Aberd., has been appointed Certifying Surgeon under the Factory Act for the Burghead District of the county of Elgin.

SIMMONS, WILFRED THOMAS, M.B., Ch.B. Univ. N.Z., has been appointed Public Vaccinator, Patea, New Zealand.

SYMES-THOMPSON, H. E., M.A., M.D. Cantab., M.R.C.P. Lond., has been appointed an Assistant Physician to the Royal Hospital for Diseases of the Chest, City-road, E.C.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ARMY MEDICAL SERVICE, 68, Victoria-street, London, S.W.—Examination of Candidates for not less than 25 Commissions in the Royal Army Medical Corps.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Senior House Surgeon. Salary £85 per annum, with board and residence.

BRITISH MEDICAL ASSOCIATION, 429, Strand, W.C.—Assistant to the Medical Secretary. Salary £200 per annum.

CAMBRIDGE, ADDENBROOKE'S HOSPITAL.—Secretary-Superintendent. Salary £250 per annum.

CARDIFF INFIRMARY.—Resident Medical Officer. Salary £120 per annum, with board, washing, and apartments. Also Two Assistant House Surgeons for six months, renewable. Salary at rate of £60 per annum, with board, washing, and apartments.

DUBLIN, ROYAL HOSPITAL FOR INCURABLES, Donnybrook.—Resident Medical Officer, unmarried. Salary £120 per annum, with board and apartments.

HOLLOWAY SANATORIUM HOSPITAL FOR THE INSANE, Virginia Water, Surrey.—Junior Assistant Medical Officer (female). Salary £150, rising to £200, with board, lodging, washing, attendance, &c.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—Resident Medical Superintendent. Salary 100 guineas per annum, with board and residence.

INDIAN MEDICAL SERVICE, India Office.—Examination for not less than 12 Commissions in His Majesty's Indian Medical Service.

JERSEY GENERAL DISPENSARY AND INFIRMARY.—Resident Medical Officer, unmarried. Salary £120 a year, with rooms, gas, and attendance.

LIVERPOOL DISPENSARIES.—Assistant Surgeon, unmarried. Salary £100 per annum, with board and apartments.

LONDON HOSPITAL, Whitechapel, E.—Medical Registrar. Salary £100 per annum.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Assistant Surgeon.

METROPOLITAN WATER BOARD.—Examining Medical Officer.

READING, ROYAL BERKSHIRE HOSPITAL.—Ophthalmic Surgeon.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.—Milroy Lecturer for 1906.

ROYAL SURREY COUNTY HOSPITAL, Guildford.—Resident House Surgeon. Salary £100, with board, residence, and laundry.

ST. PETER'S HOSPITAL FOR STONE, &c., Henrietta-street, Covent Garden, W.C.—Six Out-patient Clinical Assistants for six months each.

SOUTH DEVON AND EAST CORNWALL HOSPITAL, Plymouth.—Assistant House Surgeon for six months, renewable. Salary at rate of £50 per annum, with board and residence.

STIRLING DISTRICT ASYLUM, Larbert, N.B.—Assistant Medical Officer. Salary £150, with board, &c.

SUSSEX COUNTY HOSPITAL.—House Physician, unmarried. Salary £70 per annum, with board and residence. Also Second House Surgeon, unmarried. Salary £60 per annum, with board and residence.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician for six months. Honorarium of £25, with board and lodging.

WALSALL AND DISTRICT HOSPITAL, Walsall.—Assistant House Surgeon. Salary £50 per annum, with board, residence, and washing.

WEST LONDON HOSPITAL, Hammersmith-road, W.—House Physician for six months. Board, lodging, and laundry provided.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory Act at Bolton, in the county of Lancaster.

Births, Marriages, and Deaths.

BIRTHS.

BRAIDWOOD.—On Nov. 19th, at Southview, Epsom, the wife of T. L. Braidwood, M.R.C.S., L.R.C.P., of a son.

MCGINN.—On Nov. 17th, at Chepstow-road, Newport (Mon.), the wife of Patrick J. McGinn, L.R.C.P. & S. Irel., L.M., of a son.

MARRIAGES.

CHALLANS—BAXTER.—On Nov. 17th, at St. Paul's Church, Hammersmith, by the Rev. Arthur E. Smith, M.A., and the Rev. John Parry, M.A., Vicar, Frank Challans, M.D. Lond., of Dacre Lodge, Upton, Essex, to Clementine Mary Newsome, eldest daughter of J. Newsome Baxter, L.D.S., of 3, The Cedars, West Kensington.

DEATHS.

LEMON.—On Nov. 17th, at Derwent-road, Anerley, S.E., Henry Morris Lemon, M.D., aged 77 years, late of Bishop's Castle, Shropshire.

PATRICK.—At Lytham, on Wednesday, Nov. 15th, Robert Patrick, M.D., of Bolton.

POORE.—On Nov. 23rd, at Portland House, Andover, George Vivian Poore, M.D., F.R.C.P., youngest son of the late Commander John Poore, R.N., aged 61 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

AFFILIATION PROBLEMS.

A PRACTICAL question relative to the doctrines of heredity occasionally comes before either the Probate and Divorce Court or the petty and quarter sessions in applications for affiliation orders under the Bastardy Acts. How far does the circumstance of an infant's personal resemblance to a putative father assist the mother in "swearing the child" to him? In bastardy proceedings, will the alleged likeness of the reputed child be regarded as a sufficient "corroboration in some material particular" of the mother's affirmation as to a disputed paternity or as a mere coincidence? It has long been settled that the "material particular" need not be substantiated by another direct witness. In contests as to legitimacy will this exhibition of forensic physiology suffice to disallow the very powerful presumption in law that all children born in wedlock (and apart from divorce for nine months beyond) are legitimate? Lord Mansfield, in the Douglas Peerage Case (1769) indicated the broad lines upon which this indirect testimony is to be based—personal resemblance of form and feature, voice, mannerisms and habits, to which may be added deformity and in certain cases disease. There are numerous examples of legal decisions illustrating these conditions and they have been reported from time to time in THE LANCET. In this form of circumstantial evidence positive statements by relatives and friends are of much greater forensic weight than are the *a priori* conclusions of medical experts. Instances of these problems have occurred in the experience of most busy medical practitioners. Children are born bearing a remarkable similarity, in conformation of feature and in colour of hair, to a friend, other than the husband, of the mother; seldom do these instances gain the publicity of a court of law, for the parties concerned agree that the game would not be worth the scandal, and, further, the theory of the influence of "maternal impressions" is still as unsolved as when Jacob so practically applied it at Laban's expense. It is, however, when the mutual resemblance is patently remarkable, owing to a definite deformity or to an ethnological peculiarity, that the testimony has to be weighed and interpreted by the court. In this connexion examples of polydactyly and syndactyly have been recorded in our columns (THE LANCET, March 21st, 1903, p. 822, and Sept. 30th, 1865, p. 389). An occasional event, usually at a seaport town, is for a negro lodger to be succeeded by a mulatto baby. In 1731 it was held that such a child could not be the offspring of a putative English father. Yet in 1849 Lord Campbell ruled that if the white husband had access the dark child must be held to be his, apparently on the principle adopted in the Year Book of 1406, "who that bulleth my cow, the calf is mine." Finally, in the case of twins separate affiliation orders are advisable, thus affording an opportunity of demonstrating rare cases of superfecundation in a court of law.

DIPLOMA-MONGERING.

To the Editors of THE LANCET.

SIRS,—Can nothing whatever be done to prevent the wholesale dealing in diplomas and degrees that is taking place at the present time? The University of Cambridge having created a special diploma in tropical medicine, the Royal College of Physicians of London and the Royal College of Surgeons of England are both taking steps to do the same thing, whereby in the near future a doubly-qualified man, or an M.D. even of Cambridge, will not be considered *qualified* to practise medicine in the tropics unless he possesses a special diploma in tropical medicine, and in the near future if cholera should break out in Great Britain the doubly-qualified man will possibly be politely informed that he is not even qualified to treat the premonitory diarrhœa. Where is the entire farce going to end? Why not have special diplomas in Arctic, Alpine, and Marine Medicine, including a special knowledge of snow-blindness, frost-bite, scurvy, &c.? Surely enough good work has been done in tropical medicine to prove that it is quite unnecessary to have a *special* diploma. You, Sirs, are well aware that for many years past we have been fighting to get a complete examination and diploma in medicine, surgery, and midwifery, and all our efforts are to be cast to the 32 points of the compass. I should be much pleased to hear the views of the profession on this important question.

I am, Sirs, yours faithfully,

Nov. 22nd, 1904. ALBERT S. MORTON, M.D. Durh., M.R.C.S.Eng.

KINDLY THOUGHT FOR THE SICK POOR.

WE wonder how many men and women as they pass the doors of our hospitals give a passing thought to the sickness and suffering hidden by the walls of the institutions which minister to the needs of the sick poor? In the *Daily Mirror* of Nov. 22nd there is an illustration of some notice boards which have been placed outside the Poplar Hospital, having upon them the words "Drivers kindly walk past hospital" and "Thank you, driver." Most drivers comply with this request and moderate their speed when passing the building, thus conferring a boon upon the patients which not only tends to their comfort but also hastens their recovery. Nor is this likely to be the whole of the good conferred upon the institution in question, for

many a pedestrian seeing the notices will have his or her attention directed to the beneficent work that is being carried on and many a coin will, we hope, as a consequence find its way into the hospital contribution box. The example of the Poplar Hospital might, we think, be followed by many other hospitals with advantage to themselves and to the cause of the hospitals generally.

FLAT OR OVAL PINS.

To the Editors of THE LANCET.

SIRS,—An idea has occurred to me with regard to ordinary wire pins—the pins of which a writer said, that "Twill employ seven men, they say, to make a perfect pin." Perhaps, if you think the notion of any value, you will kindly give publicity to it. The shape of the pin has its drawbacks and it has occurred to me that if the stems were made flat or oval instead of round as at present this inconvenience might be obviated. Such pins would be useful, for example, in pinning papers to be transmitted by post as I have seen thin envelopes torn by the pins attached to papers inside the packet. There are other purposes where to have pins lying flat with no upstanding head would be a convenience, and I should think that medical men could furnish examples. Is there any reason why pins should not—some at any rate—be made flat?—I am, Sirs, yours faithfully,

London, Nov. 21st, 1904. SCRIBE.

THE LAY PRESS, "A SOCIETY LEADER," AND "BLOODLESS SURGERY."

THE public has been breathlessly informed by paragraphs in the press that "a society leader" has undergone surgical treatment at the hands of a German exponent of bloodless surgery, who reduced certain deformities the results of fractures of the lower limbs "on the Dr. Lorenz system." This obvious nonsense has been repeated in many quarters and must have aroused some astonishment in the minds of surgeons. The public likes to hear about the pathological condition of "a society leader," and the papers which cater for the public without any great regard for taste or accuracy may be expected to print such paragraphs. But it would be interesting to know who furnished the information and if the writer of the paragraph had the least idea either of the status of the German operator or the technique of Dr. Lorenz and its results. By the way, the suggestion that a German has done something which an Englishman has been presumably unable to do is sometimes a little galling, and this is the exact feeling that has probably led to the wide dissemination of the paragraph. Certain writers for the press have an idea that the continental practitioner, regular or irregular, has secrets unknown to the orthodox English medical schools, and the belief appeals to the uneducated public, or we may be sure the allusions to the dexterity of French accoucheurs, German aurists, Belgian corn-cutters, and so on, would not find their way into print with such frequency.

THE PURITY OF BREAD.

To the Editors of THE LANCET.

SIRS,—THE LANCET is, as a rule, so judicious and so rational in its references to bread and bread-makers that it was with a great shock of surprise that I read the annotation under the above title in THE LANCET of Nov. 19th. The substance of that article is being repeated in papers all over the country and will tend very seriously to deepen the ignorance and to intensify the prejudices of the public about their daily bread and the men who produce it.

I cannot in the least understand why you object to the bleaching of flour. The bleached flour is every way as pure, as wholesome, and as nutritious after it has gone through the process as it was before. The sole and solitary difference is that it is a little whiter. Why, then, object to the process? and, above all, why talk about "unscrupulous tradesmen"?

With regard to the old question of stone-milled *versus* roller-milled flour, I would like to point out—first, that the difference in nutritive value is very small; and, secondly, that most people on these islands eat so little bread and so much of other things that the question of nutritive value is of no very serious moment. People will have white bread, as white as they can get it, and in response to that demand the millers of this country have revolutionised their methods. They have, at enormous expense, rejected their old machinery and installed new, and it is not fair to expect them to reverse this process till the public shows unmistakable signs of having changed its mind. The wholemeal and germ breads are available for those who require a more nutritious loaf.

The matter of the delivery of bread—also referred to by a correspondent—is one which certainly deserves serious attention. But that attention must come first of all from the public. Bakers must be content to give people what they want; they can hardly be expected to take a vast amount of trouble in the attempt to satisfy a non existing demand. I am, Sirs, yours faithfully,

Nov. 21st, 1904. EDITOR, "THE BAKER AND CONFECTIONER."

DRINK AND LABOUR.

To the Editors of THE LANCET.

SIRS,—Though a regular reader of your journal for many years I have never previously troubled you with a letter. Your leading article with this title moves me to address you, as it appears that you are keenly alive to the educational opportunities of labour leaders and trade societies but curiously blind to the better opportunities of the medical profession in this direction. It is a well-known fact that the majority of the public regard their medical adviser as an oracle whose opinion on medical, domestic, and scientific subjects is unquestionable. Here, then, is the opportunity to emphasise the grave evils of indulgence in alcohol, to point out its insidious dangers, and to recommend abstinence. I am not competent to pronounce upon the possible beneficial effect of alcohol in particular circumstances, but the terrible possibilities of development should give pause to every thinking man before taking the responsibility of recommending such a doubtful remedy. Medical men frequently recommend abstainers to take alcoholic drinks under the impression that they are nourishing and strengthening. This mostly happens in cases where the physician is totally ignorant of the chemical constituents of the beverage. I suggest that the medical press can do much to bring these points home to the thoughtless members of the profession and urge them to consider their responsibility in this connexion. I am, Sirs, yours faithfully,

Nov. 21st, 1904. CHEMIST.

A QUESTION IN ETHICS.

To the Editors of THE LANCET.

SIRS,—Would you kindly give me your opinion on the following point? A, B, and C are surgeons to a works sick club. Each workman may choose his own medical man each year from the three surgeons, who are not partners. D, a fourth surgeon, buys a practice in the town and is asked by a non-medical friend if he would care to have his name put on the list of surgeons. He is told to send in an application to the secretary, when it will be arranged. Would it be correct to apply for the post? I am, Sirs, yours faithfully,

Nov. 21st, 1904. ETHICS.

*** Two questions are involved. Is the club itself run on proper lines? If the rules of the club are such as the best professional opinion has objected to—if, for example, there are no wage restrictions with regard to members and if the whole management is in the hands of a lay committee—it would not be right for D to become an official of the institution any more than it is right for A and B and C to hold office at present. But supposing that A, B, and C are surgeons of a completely reputable institution, is D's conduct correct in seeking to become their colleague? D's best course is to ascertain what their views are.—ED. L.

EXCESSIVE OVULATION.

THE *Queen* announced the following in its issue of Oct. 29th:—Some months ago Miss —— was delivering from 2000 to 3000 eggs weekly.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (28th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

TUESDAY (29th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Royal Ear (3 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.).

WEDNESDAY (30th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

THURSDAY (1st).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square, (9.30 A.M.), Guy's (1.30 P.M.).

FRIDAY (2nd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.).

SATURDAY (3rd).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

MONDAY (28th).—ODONTOLOGICAL SOCIETY OF GREAT BRITAIN (20, Hanover-square, W.).—7 P.M. Council. 8 P.M. Communication:—Dr. T. H. Kellock: Actinomycosis. (Patients in whom this affection is present about the mouth will be shown, also microscopic slides.) Paper:—Mr. R. D. Pedley: The Relationship between Dental and other Diseases.

MEDICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—8.30 P.M. Papers:—Mr. D'Arcy Power: Duodenal Ulcer and its Treatment.—Dr. C. Bolton: Primary Heart Failure as the Immediate Cause of Death in Acute Diphtheritic Toxæmia.

FRIDAY (2nd).—WEST KENT MEDICO CHIRURGICAL SOCIETY (Royal Kent Dispensary, Greenwich-road, S.E.). 8.45 P.M. Mr. J. Bland-Sutton: Abdominal Pregnancy in Women, Cats, Dogs, and Rabbits. Conversazione. Exhibits:—The President: Slides in the Oxyhydrogen Lantern.—Dr. S. Barnett: Stereoscopic Skiagraphs.—Mr. J. J. Vezey: (1) Apparatus for Wireless Telegraphy (in action); (2) Some Fluorescent Materials shown in Ultra-violet Light by means of the Optical Lantern; (3) Radium and Polonium.—Medical Supply Association: Surgical Instruments.—Messrs. Duncan, Flockhart, and Co.: Therapeutic Preparations.—The Galen Manufacturing Co.: Surgical Dressings.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY (West London Hospital, Hammersmith, W.).—8.30 P.M. Papers:—Dr. A. E. Russell: The Diagnosis of Acute Abdominal Disease.—Dr. C. H. Fennell: Juvenile General Paralysis.

SOCIETY OF ANÆSTHETISTS (20, Hanover-square, W.).—8.30 P.M. Resumed Discussion on the Vernon-Harcourt Inhaler. Dr. D. Buxton, Sir Victor Horsley, Mr. Silk, Mr. Low, Mr. MacCardie, Mr. H. Hilliard, Mr. Bakewell, and Mr. Crouch will take part.

LARYNGOLOGICAL SOCIETY OF LONDON (20, Hanover-square, W.).—5 P.M. Cases, Specimens, &c., will be shown by Dr. Law, Sir F. Semon, Dr. Brouner, and others.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (28th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. J. Galloway: Clinique. (Skin.) 5.15 P.M. Mr. D. Armour: Injuries to the Spine and Spinal Cord.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Baldwin: Practical Surgery.

TUESDAY (29th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. C. Thomson: Clinique. (Medical.) 5.15 P.M. Mr. W. S. Low: Emergencies in Nose, Throat, and Ear Practice.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Armour: Injuries to Spine and Spinal Cord.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M. Dr. J. Taylor: Myasthenia Gravis.

GLASGOW OPHTHALMIC INSTITUTION (126, West Regent-street).—8 P.M. Demonstration of Ophthalmoscopic Cases, Stereoscopic and other Photographs, Pathological Specimens, and Microscopic Slides. Emergencies in Ophthalmic Practice. (Post-Graduate Course.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—4.30 P.M. Dr. H. Corner: Mania and Melancholia.

WEDNESDAY (30th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. J. Smith: Clinique. (Surgical.) 5.15 P.M. Mr. G. B. M. White: Whitlow and Suppurations in the Hand.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Beddard: Practical Medicine.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (Brompton).—4 P.M. Mr. S. Boyd: The Surgical Treatment of Empyema.

CENTRAL LONDON THROAT AND EAR HOSPITAL (Gray's Inn-road, W.C.).—5 P.M. Demonstration:—Dr. D. Grant: Larynx.

THURSDAY (1st).—ROYAL COLLEGE OF SURGEONS OF ENGLAND.—5 P.M. Mr. A. W. Mayo Robson: Cancer and its Treatment. (Bradshaw Lecture.)

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M. Dr. H. Tilley: Earache, its Causes, Diagnosis, and Treatment.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Russell: Intestinal Ulceration.

SAMARITAN FREE HOSPITAL FOR WOMEN (Marylebone-road, N.W.).—3 P.M. Dr. McCann: The Treatment of Dysmenorrhœa.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (7, Fitzroy-square, W.).—5 P.M. Lecture: Dr. T. D. Lister: Congestion of the Lungs. (Post-Graduate Course.)

THE HOSPITAL FOR SICK CHILDREN (Gt. Ormond-street, W.C.).—4 P.M. Lecture:—Dr. Still: Infantile Scurvy.

ST. MARK'S HOSPITAL FOR FISTULA AND OTHER DISEASES OF THE RECTUM (City-road, E.C.).—11 A.M. Mr. S. Edwards: Lecture-Demonstration on Diseases of the Rectum.

FRIDAY (2nd).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. S. Stephenson: Clinique. (Eye.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Abraham: Cases of Skin Disease.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M. Mr. M. Gunn: Optic Neuritis.

SATURDAY (3rd).—ST. MARK'S HOSPITAL FOR FISTULA AND OTHER DISEASES OF THE RECTUM (City-road, E.C.).—2.30 P.M. Mr. P. Furnivall: Clinical Demonstration in the Out-Patient Department.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

The rates of subscriptions, post free, either from THE LANCET Offices or from Agents, are:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE. It has come to the knowledge of the Manager that in some cases higher rates are being charged, on the plea that the heavy weight of THE LANCET necessitates additional postage above the ordinary rate allowed for in the terms of subscriptions. Any demand for increased rates, on this or on any other ground, should be resisted. The Proprietors of THE LANCET have for many years paid, and continue to pay, the whole of the heavy cost of postage on overweight foreign issues; and Agents are authorised to collect, and do so collect, from the Proprietors the cost of such extra postage.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied. Address—THE MANAGER, THE LANCET OFFICES, 423, STRAND, LONDON, ENGLAND.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Nov. 24th, 1904.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radia in Vacuo.	Maximum Temp Shade.	Min. Temp	Wet Bulb	Dry Bulb.	Remarks at 8.30 A.M.
Nov. 18	30·41	W.	...	48	48	38	38	39	Foggy
" 19	30·14	W.	...	60	53	39	47	48	Overcast
" 20	30·10	W.	0·02	54	50	43	41	43	Cloudy
" 21	29·93	S.W.	...	61	45	36	37	39	Cloudy
" 22	29·35	N.W.	0·06	46	40	32	33	34	Cloudy
" 23	29·49	W.	...	57	40	30	29	32	Fine
" 24	29·68	N.E.	0·15	38	34	29	29	31	Overcast

During the week marked copies of the following newspapers have been received:—*Literary Digest (New York), Scientific American, Morning Post, Morning Leader, Daily Chronicle, Times, Yorkshire Daily Observer, Liverpool Courier, South Wales Daily Echo, Cambridge Chronicle, Eastern Daily Press, Western Mail (Cardiff), Bolton Daily Chronicle, Westminster Gazette, Irish Times, Spectator, Essex Observer, &c.*

Communications, Letters, &c., have been received from—

A.—Mr. Walter Allingham, Salisbury; Aberdeen Public Library, Librarian of; A. M. C. P.; Messrs. Lucien Allégre and Co., Lond.; Messrs. Allen and Hanburys, Lond.

B.—Dr. F. Lucas Benham, Exeter, South Australia; Bristol Medico-Chirurgical Society, Hon. Secretary of; Messrs. Burroughs, Wellcome, and Co., Lond., Mr. de Erven F. Bohn, Haarlem; Mr. W. H. Beach, Bridgnorth; Mr. J. A. Barth, Leipzig; Messrs. J. N. Bishop and Sons, Lond.; Dr. J. B. Byles, Lond.

C.—Mr. G. C. Chatterjee, Ca'cutta; C. K.; Mr. J. S. Cotman, Lond.; Mr. E. S. Crispin, Khartoum; Clinical Society of Manchester, Hon. Editor of; Chelsea Clinical Society, Editorial Secretary of; Messrs. T. Christy and Co., Lond.; Cardiff Infirmary, Secretary of; China Association, Lond., Secretary of; Dr. M. Chisholm, Halifax, Nova Scotia; Messrs. J. and J. Cash, Coventry; Dr. W. F. Colclough, Sherborne; Mr. John Campbell, Swinefleet.

D.—Mr. H. Dickinson, Wembley; Mr. N. R. Dharmavir, Edinburgh; Dr. J. Dunbar-Brunton, Leatherhead; Derby County Asylum, Mickleover, Clerk of.

F.—Major G. H. Fink, I.M.S. (retired), Lond.; F. W.; Mr. O. Flammger, Lond.; Fellow's Medical Manufacturing Co., New York; Dr. C. W. Fassett, St. Joseph, U.S.A.; Messrs. Fairchild Bros. and Foster, Lond.; Mr. Arthur E. Francis, Lond.; Messrs. Feuerheerd Bros. and Co., Lond.

G.—Dr. F. Griffith, New York; Dr. G. C. Garratt, Lond.; Dr. R. A. Glegg, Bordighera, Italy; Mr. George Gresswell, Grimsby; Messrs. Giddy and Giddy, Lond.

H.—Mr. J. Hall, Skelmersdale; Dr. H. F. Holland, Haslemere; Holborn Surgical Instrument Co., Lond.; Mr. H. S. Harris, Esher; Dr. J. F. Hodgson, Halifax; Mr. Christopher Heath, Lond.; Mr. Jonathan Hutchinson, Lond.; Dr. Stanley Haynes, Malvern.

I.—*Indian Public Health*, Editor of.

K.—Dr. W. E. de Korté, Lond.; Right Hon. Viscount Knutsford, Lond.; Professor W. W. Keen, Philadelphia; Kenmore; Messrs. R. A. Knight and Co., Lond.; Messrs. T. Kirby and Sons, Walsall.

L.—Dr. H. A. Lediard, Carlisle; Messrs. D. Lawrence and Son, Lond.; G. W. Lawson Advertising Agency, Detroit, U.S.A.; Leeds and West Riding Medico - Chirurgical Society, Hon. Secretary of; Messrs. Lee and Nightingale, Liverpool; Mr. R. T. Lang, Lond.

M.—Dr. J. C. McWalter, Dublin; Messrs. Matthews Bros., Lond.; Messrs. Morison, Pollexfen, and Blair, Lond.; *Midland Counties Herald*, Birmingham, Manager of; Marconi's Wireless Telegraph Co., Lond.; Messrs. McKesson and Robbins, New York; Messrs. C. Macdonald and Co., Chicago; Mr. F. V. Milward, Birmingham; Maltine Manufacturing Co., Lond.; Medical Society of King's County, Brooklyn, Librarian of; Mr. A. B. Meacham, New York; Mr. S. Morgenthigel, Manchester; Middlesex Hospital, Lond., Secretary-Superintendent of; Dr. A. W. Mackintosh, Aberdeen; Manchester Southern Hospital, Secretary of.

N.—Dr. A. Newsholme, Brighton; Nurses' Co-operation, Lond., Secretary of; Mr. Samuel C. Noble, Kendal; Newcastle-on-Tyne City Hospital, Secretary of; Mr. J. C. Needes, Lond.; Mr. H. Needes, Lond.

O.—Dr. George Ogilvie, Lond.

P.—Mr. Y. J. Pentland, Edinburgh; Dr. D. W. Patterson, Newcastle-on-Tyne; Pahang, State Surgeon of, Kuala Lipis; Dr. W. Pasteur, Lond.; Pro bono publico; Messrs. Peacock and Hadley, Lond.; Dr. W. H. Pritchard, Blaenau Festiniog; Major-General F. H. Poore, Andover.

R.—Mr. Fred Reynolds, Leeds; Dr. S. C. Roy, Leicester; Mr. Hamilton Russell, Melbourne; Royal College of Surgeons of England, Lond., Secretary of; Royal College of Surgeons in Ireland, Dublin, Registrar of; Royal Hospital for Incurables, Dublin, Secretary of; Mr. A. W. Mayo Robson, Lond.; Mr. W. Mitchell Roocroft, Wigan.

S.—Dr. A. I. Simey, Lond.; Mr. Sydney Stephenson, Lond.; Dr. L. E. Shaw, Lond.; St. Mary's Hospital Medical School, Lond.; Messrs. T. J. and W. G. Shaw, Stoke-on-Trent; School of Physics, Dublin, Secretary of; Stirling District Asylum, Larbert, Secretary of; Sanitas Co., Lond.; Messrs. G. Street and Co., Lond.; Society of Arts, Lond., Secretary of; Scholastic, Clerical, &c., Association, Lond.; Saarbach's News Exchange, Mainz.

T.—Dr. Stuart Tidey, Montreux; Sir John Batty Tuke, M.P., Edinburgh; Dr. J. C. Thresh, Lond.; Therapeutical Society, Lond., Secretary of; Mr. G. G. Turner, Newcastle-on-Tyne.

V.—Mr. J. J. B. de Villiers, Lond.

W.—Dr. T. R. C. Whipham, Lond.; Mr. W. Roger Williams, Clifton; West Kent Medico-Chirurgical Society, Hon. Secretary of; Warwickshire County Council, Leamington, Clerk of; Miss Ward, Lond.; Dr. William H. Wynne, Birmingham; Messrs. H. Wilson and Son, Lond.

Z.—Dr. S. C. Zavitzianos, Munich.

Letters, each with enclosure, are also acknowledged from—

A.—Dr. R. Appleton, Lond.; A., Kidderminster; Messrs. W. A. Appleyard and Sons, Middlesbrough; A. L.; Aerators, Ltd., Lond.; A. H. S.; Messrs. Arding and Hobbs, Lond.

B.—Mr. C. Birchall, Liverpool; Mr. W. L. Baker, Margate; Dr. W. M. Brown, Crewe; Bedford County Hospital, Secretary of; Mr. C. H. Badcock, Lond.; Bootle Borough Hospital, Clerk of; Belgrave Hospital for Children, Lond., Secretary of.

C.—Mr. C. Colbran, Great Malvern; Miss Clarke, Hereford; C. A. L.; C. H. L.; C. R. K.; C. H. G. A.; Messrs. J. and A. Carter, Lond., Messrs. S. B. Clark and Son, Lond.; C. D., Newcastle-on-Tyne; Messrs. Cassell and Co., Lond.; Dr. F. Challans, Upton; Dr. J. P. Candler, Lond.; Coventry and Warwickshire Hospital, Secretary of; Carnarvonshire, &c., Infirmary, Bangor, Secretary of; C. S.; Mr. G. B. Carey, Peterborough; Mr. F. W. Clarke, Manchester.

D.—Dr. P. J. Daly, Cork; Dr. G. Drummond, Cornsay Colliery; Miss Dickinson, Lond.; Doctor, Lond.; D. C.; Down District Asylum, Downpatrick, Clerk of.

E.—Messrs. S. and P. Erard, Lond.; Mr. C. Elliott, Leeds; E. G.

F.—Messrs. Fuller, Smith, and Turner, Lond.; F. H. E.

G.—Mr. Gordon, Kilkeel; Messrs. J. F. Gibbs and Co., Lond.; Dr. G. F. Genge, Bournemouth.

H.—Hereford County and City Asylum, Clerk of; H. M.

I.—Inspector of Prisons, Cairo, Egypt.

J.—Dr. F. H. Jacob, Nottingham; J. S. G.; J. U.; J. P. L.; Miss Jex-Blake, Hereford.

K.—Messrs. H. and T. Kirby, Lond.

L.—Mr. C. H. Lakin, Shortlands; Mr. H. K. Lewis, Lond.; Dr. D. Lawson, Banchory; L. J. P. M.; Dr. T. D. Luke, Edinburgh; Messrs. D. Lawrence and Son, Lond.; Mr. W. R. Locke, Hemel Hempstead.

M.—Dr. J. Mulligan, Abersychan; Dr. G. Metcalfe, Spennymoor; Dr. J. C. Muir, Lond.; Medicus, Lond.; Major R. M. Maddox, I.M.S., Chota Nagpur; Dr. C. Macmaster, Perth; Manchester Children's Hospital, Secretary of; Messrs. C. Mitchell and Co., Lond.

N.—Dr. W. R. Nicol, Llandudno; New Pegamoid, Ltd., Lond.; Mr. S. C. M. Nourse, Clacton-on-Sea.

O.—Dr. Henry O'Neill, Belfast; Dr. R. L. Owen, Holywell.

P.—Mr. F. Piggott, Cambridge; P. S. W.

R.—Mr. W. Ramsay, Melbourne, Australia; Royal Ear Hospital, Lond.; *Reading Mercury*, Publisher of; R. D. M.; Messrs. Ravenshear and Massey, Lond.; R. M. T.

S.—Dr. S. Simpson, Crickhowell; Mr. J. Sellers, Lond.; St. Mary's Hospital, Manchester, Secretary of; Mr. H. W. Scriven, Lond.; Mr. H. M. Stratford, Bicester; Messrs. Stapleton and Son, Stamford; South Devon, &c., Hospital, Plymouth; Messrs. R. Sumner and Co., Liverpool; Dr. J. Smith-Marr, Ellon; Mr. H. V. Storey, Oxford.

T.—Dr. J. W. Thomson, Wakefield; T. F. H. B.; Mr. J. Thin, Edinburgh.

U.—University of St. Andrew's, Factor of.

V.—Vinolia Co., Lond.

W.—Mr. H. R. Williams, Buckley; West Bromwich District Hospital, Secretary of; Whitfield's Bedsteads, Ltd., Birmingham; Messrs. Windus, Bolton; W. A.; Wolverhampton General Hospital, Secretary of; W. R. J.; W. E. S.; W. T.; Warwick County Asylum, Hatton, Clerk of; Mr. F. Williams, Romford.

EVERY FRIDAY.

THE LANCET.

PRICE SEVENPENCE.

SUBSCRIPTION, POST FREE.

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance.

ADVERTISING.

Books and Publications ...	Seven Lines and under	£0 5 0
Official and General Announcements	Ditto	0 5 0
Trade and Miscellaneous Advertisements	Ditto	0 4 6
	Every additional Line	0 0 6

Quarter Page, £1 10s. Half a Page, £2 15s. An Entire Page, £5 5s.
Terms for Position Pages and Serial Insertions on application.

An original and novel feature of "THE LANCET General Advertiser" is a Special Index to Advertisements on pages 2 and 4, which not only affords a ready means of finding any notice but is in itself an *additional* advertisement.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Answers are now received at this Office, by special arrangement, to advertisements appearing in THE LANCET.

The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to Advertisements; copies only should be forwarded.

Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to Advertisements or Subscriptions should be addressed.

THE LANCET can be obtained at all Messrs. W. H. Smith and Son's and other Railway Bookstalls throughout the United Kingdom. Advertisements are also received by them and all other Advertising Agents.

Agent for the Advertisement Department in France—J. ASTIER 31, Rue Bapte, Asnières, Paris.